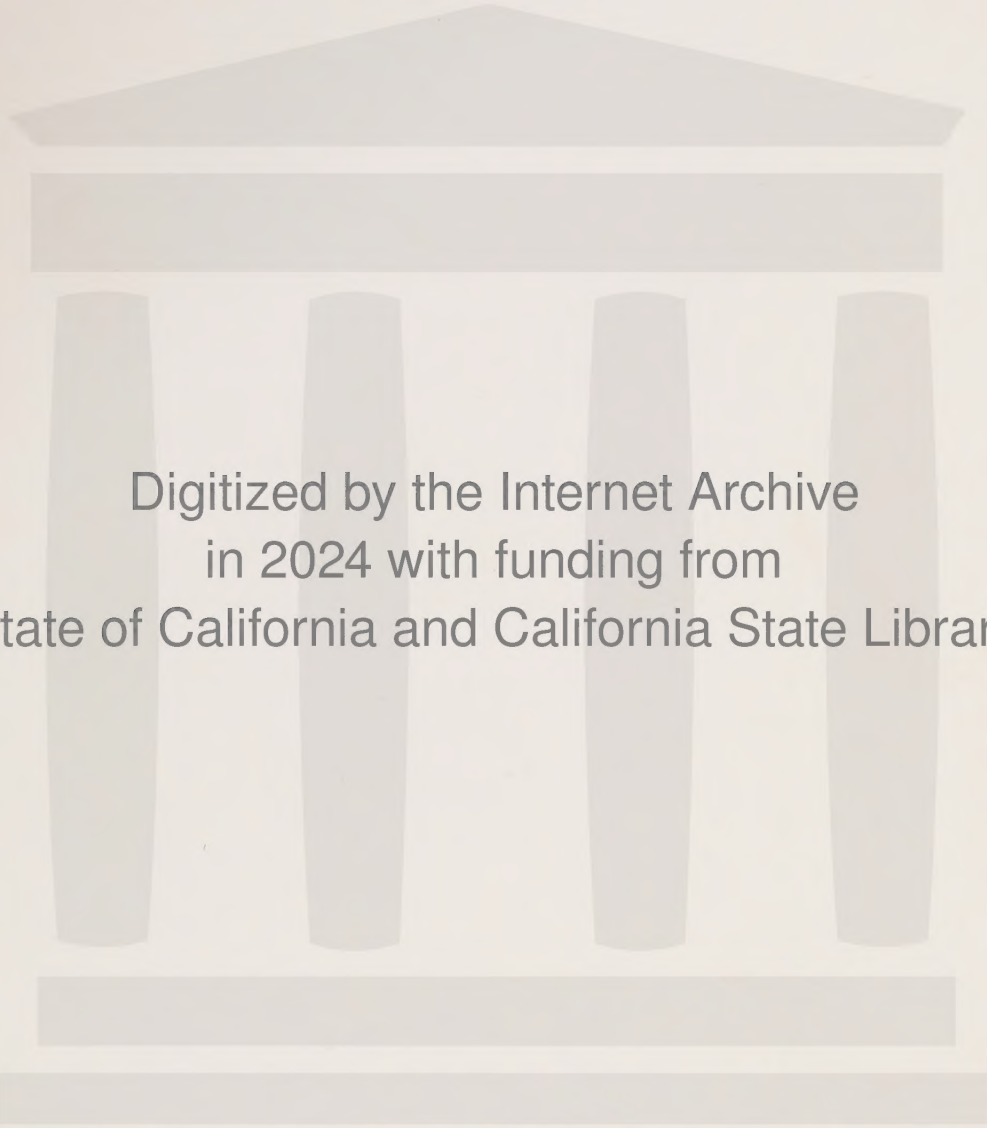


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pt. 2

# Urban Resource Development

San Francisco Part I Volume II

Stanford University  
June 1970



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HOUSING AND URBAN RESOURCE DEVELOPMENT  
FOR THE  
CITY OF SAN FRANCISCO

Robert DeVelbiss  
Dept of City planning  
San Francisco Cal.

Volume II

An Interdisciplinary Study  
in Systems Design at  
Stanford University  
Winter and Spring Quarters 1970

Final Report  
June 1970

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## Chapter III

### RECOMMENDATIONS AND PROPOSALS

#### A. PHYSICAL STATE

Recommendations - Our efforts to redesign the focus communities were underlined by two compelling considerations: to free the ghetto dwellers as much as possible from their physical constraints by providing more land for public use, and tailoring this area to their needs and tastes as much as possible. The proposals for the Mission District and Chinatown have employed the idea of the street as the neighborhood center, a concept developed by Ed Wittner, a Stanford Graduate student. By blocking off residential streets (leaving main arteries and secondary streets open), Wittner is seeking to provide residents with "liberated areas" for their use and development. The key to his idea is the requirement that the decision of how the land can be best used be made by the residents of the area themselves; professionals may be used to develop and implement the plans, but the initial proposals must come from the people themselves.

The India Basin Park design proposes to develop the waterfront area into a useful community center for neighboring Hunter's Point.

##### 1. Mission Proposal

Although certain areas of the Mission District cannot be improved through anything less than reconstruction, the majority of the housing could be made suitable for decent living through renovation. This would meet the primary needs of the residents of the Mission. Thought might also be given to the use of the streets in an area where there is already a street culture. If closed off and used by everyone in a neighborhood -- grandparents, small children, parents, in addition to adolescents -- they could be turned into assets of living in the Mission District instead of the disadvantages that they often now are.

In this report on use of the street as the neighborhood center, Ed Wittner proposes that certain residential streets

be blocked off from traffic, freeing the area for use by residents.

The first step in adapting a street to the needs of its neighborhood might be to make residential streets all dead-end. Traffic would then flow as usual on the main and secondary streets, but the smaller streets would be open only to pedestrians. As other types of public transport relieved pressure from the secondary, these residential streets could be completely closed off or reduced to one lane. To provide for needs such as fire protection and freight deliveries to local community stores (which might be resuscitated by creation of these malls), these streets would be closed off to all traffic other than emergency vehicles and delivery trucks.

A closed-off street could become one of many things to a neighborhood: a playground, a quiet park, an open air market, or a busy commercial area. Some communities would readily take advantage of these newly opened areas, whereas others might not. The initiative would be left to them.

Instead of being suppressed, the local street culture could this way develop into a desirable, positive aspect of high-density population city life.

## 2. Chinatown Proposal

Five specific concepts have been developed in response to the physical, social, and practical demand of Chinatown. Working together in different combinations, they provide several alternatives for actual implementation programs.

- i. The Intersection Arcade - This is an arcade of small shops and restaurants built at the intersection of two streets, similar in concept to the Chinese Trade Center on Grant Avenue. The arcade area may be built to allow some vehicular traffic through it if necessary, although the close, personable feelings of narrow, twisting, staircases balancing their small shops and winding passages should be for the pedestrian. The arcade occupies approximately the first two levels and the above three or four are devoted to residential living units.

- ii. Reconstruction-Relocation - The apartment levels that these intersection arcades make available, provide a unique possibility for solution of the reconstruction-relocation problem. When an intersection arcade is built, the tenants of a building marked for reconstruction on an adjacent block are given priority in filling it, and at the same rent level as in their original building. The old building is torn down rather than rehabilitated because of their poor quality. A new building is erected in its place, sensitive in appearance to the Chinese character of the area, and rising to a maximum of six stories. Hopefully, a high-rise construction could be employed here so that additional vertical and cantilever levels could be added as time brings more demand. The heights of all buildings should be carefully varied to prevent border construction of high-rise "barrier-walls" with gaping, dark, gangerous voids in the center of their blocks. Tenants from the neighboring condemned apartment buildings and shops are encouraged to move into this new building, and their building is reconstructed. In this way each old building on the block can be reconstructed with its tenants and shop owners never moving farther than next door into a new building. When the last building on the block is destroyed, the community can decide whether it wants another building constructed and families redistributed into it, reducing overcrowding, or have the space converted into a pleasant park or garden.
- iii. Rooftops - The rooftops in Chinatown are flat, give beautiful views of San Francisco, but in spite of the "non-existence" of open space, are altogether unused. We propose that community projects be initiated, encouraging tenants and landlords to develop their rooftops into gardens or pleasant outdoor spaces. (Why seek refuge in the congested streets when your roof offers a delightful, quiet, and cool retreat?)
- iv. The Community Block - A community block is a unit of four adjacent blocks isolated from vehicular traffic. The integrity of the blocks as a community is created by the existence of four intersection arcades at the end of the cross streets and a community park or playground at its center intersection. The Chinese presently have no physical representation such as this of their identity and interrelationships as a community.

- v. Above-street Ramp System - We have had a very definite statement from Transportation Systems (one of the 12 working groups of this course), that in the next 20 years it is very unlikely that any streets in Chinatown will be free of vehicular traffic. If the cars have to stay on the streets and the people as well (because the shops and restaurants are only accessible from the sidewalks) then we propose the following ramp scheme. A simply fabricated ramp, with decks or even shops at the intersection spaces, about 8 ft. above the street level (high enough to allow camper vehicle passage) can be built over the cars. Floating staircases up from the sidewalks would provide window browsers easy access to a faster-walking area with benches and potted greenery along its edges, and simultaneously, prevent the miserable "tunneled-in" feeling by passengers in the cars since they have almost normal, horizontal vision and light passage through the stair steps. This ramp could be spaced continuously or irregularly along the street.

With these five concepts in mind, we suggest the following alternatives, but point out that different choices and combinations may provide better solutions for specific situational problems.

#### Area Traffic Isolation

This proposal is based on the assumption that vehicular traffic may be prohibited in the central core area of Chinatown and perhaps in some areas of the residential area.

##### a. Core Area:

1. Develop Grant Avenue into a pedestrian mall with moving sidewalks or small trolley-car service down its length.
2. Construct intersection arcades at (in order of construction): Washington and Stockton streets, Pacific and Stockton, Jackson and Powell, Clay and Powell, and California and Stockton.

These will create a visual and physical integrity for an enlarged central core section and yet provide a boundary against its over-running the residential area too much more in the future.

##### 3. Open Spaces

- parks at Jackson and Stockton intersection.
- parks as physical terminals to end of Grant Ave. mall.

-- rooftop development programs.

b. Residential Area:

Employ the community block concept. For example, it could be located within the unit of Taylor, Pacific, Leavenworth, and Washington streets.

Restriction of Grant Avenue

This proposal is based on the assumption that only Grant Avenue can be either entirely or partially blocked off (allowing cross street traffic).

- a. Grant Ave. - Create a pedestrian mall as in Proposal I, modifying it as necessary if cross traffic is required.
- b. Remaining Core Area - Develop the rooftops as explained above. Create an above street ramp system. For instance, those portions of Clay, Washington, Jackson, and Pacific streets in the intermediate core section could be used for the ramp system.
- c. Reconstruction-Relocation
  1. Acquire air rights and construct intersection arcades or just apartment levels above the same intersections recommended in Proposal I.
  2. Continue with the reconstruction-relocation scheme for the area.

3. India Basin Proposal

Like smog, noise or garbage, visual pollution can diminish the quality of urban life. San Francisco's bayfront is visually polluted by an almost unbroken stretch of piers, warehouses, factories and power plants from Candlestick Park to Fisherman's Wharf. The water surrounding the city gives it a special quality, and where industrial development forms a barrier between land and waterfront, that part of the city loses its vitality. To preserve its unique flavor, San Francisco must reclaim its waterfront and open it up for the benefit of all.

The India Basin area is the only waterfront land not yet developed in the San Francisco area, and offers the only prospect for waterfront improvement. In addition, its location

near Hunter's Point places it in a neighborhood which desperately needs recreation and parks.

Our objectives in redesigning the India Basin area are threefold: to convert an unused piece of land into an asset, to emphasize the water and the interface between land and sea, and to provide an identity and focal point for Hunter's Point.

The site consists of a roughly rectangular piece of land measuring about 1,000 ft. by 1,200 ft., located on the south side of India Basin and bordered on the southeast by the Naval Shipyard. (See Fig. III-1). Innes Ave. forms the boundary between the park and Hunter's Point hill. The land is predominantly flat and at sea level, except for a strip running along Innes Ave. which is 20 to 30 ft. higher than the rest of the area.

Next to his part of the park is a boatyard, and beyond the boatyard, a small point sticks out into the Basin from the strip along Hunter's Point boulevard. The remainder of the Basin is occupied by the Pacific Gas and Electric power plant and the fill for the containership terminal.

As it is now, the India Basin has few assets and several liabilities. The area itself is flat and featureless, and hemmed in by steep hills. A PG&E plant dominates the area visually with its stacks and transformer yard. Furthermore, the surrounding neighborhood is a poor black ghetto which suffers the characteristic social consequences of neglect and prejudice: drug addiction, vandalism, street crime, and inadequate police protection.

There are several ways in which the India Basin site might be improved:

1. The area should be landscaped.
  - a. Enclose the shoreline by a seawall built out to the low tide level to eliminate the tidal shingle area. Extend the seaward corner to provide a fishing area and partially screen out the PG&E plant. Build a walk with adequate lighting on the wall.

**LEGEND:**

- /// landscape
- ⊙ trees
- - - sea wall
- project

**Numbers on Map**

1. Restaurant
2. Parking
3. Community Center
4. Landmark
5. Commercial Center

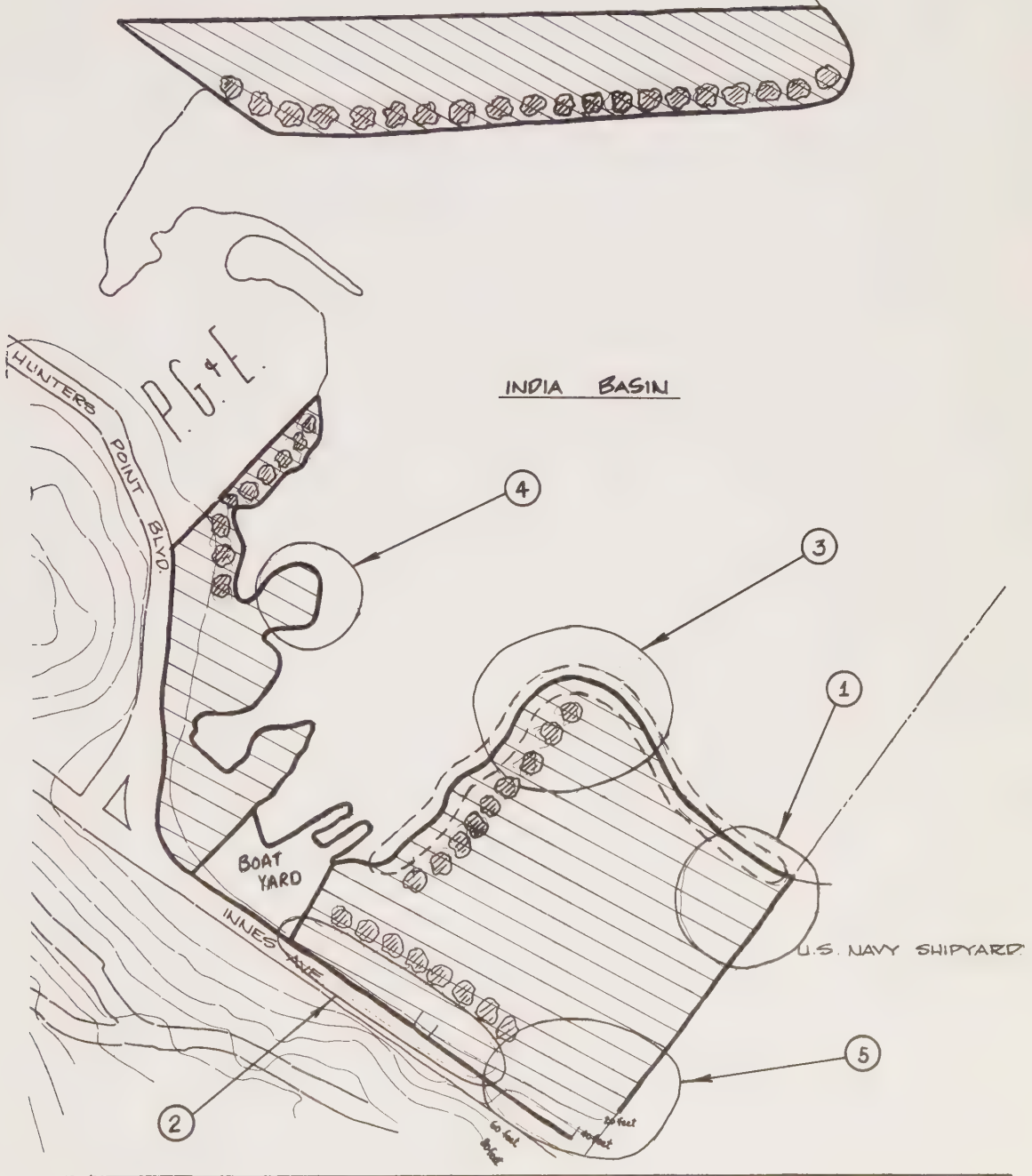


Figure III-1. INDIA BASIN

- b. Build a ridge up parallel to the basin side of the park and plant it with dense trees like Eucalyptus, to screen out the power plant.
  - c. Transplant a sufficient number of mature trees to provide an initial screen.
  - d. Plant a tree screen around the PG&E plant itself on its waterfront side.
  - e. Plant ground cover along the bare slopes bordering Innes Ave. and Hunter's Point Boulevard.
  - f. Widen Innes Ave. to permit diagonal parking, and install a stoplight at the intersection of Innes Ave. and Hunter's Point Blvd.
2. Community facilities should be provided.
- a. Design a cultural center for local rather than for San Francisco as a whole. It might be feasible to build it using African methods and materials, both to emphasize the heritage of the Black residents and to reduce costs. By locating the center on the waterfront corner, it would balance the commercial center, which would be on the other end of the park's diagonal.
  - b. Build a community center to provide offices and places for groups to meet, such as adult education classes. Scale the size of the center to the anticipated needs of the community, taking into consideration the space provided by other centers in the community. Locate the center near the cultural center; perhaps the two could be combined.
  - c. To prevent the park from becoming a hazardous area, provide adequate police patrolling. By locating a station in the commercial center and by adding an access road up the hill at that point, the police would be centrally located both in the park and in the community.
  - d. Include an indoor gym in the community center. Fields for football and other outdoor sports should be suggested by the plantation of stands of trees rather than formally laid out, both to reduce maintenance costs and to preserve the open aspect of the park.
3. Develop a commercial center.

- a. Build a restaurant with a view overlooking the Bay on the point below Hunter's Point Blvd.
  - b. Build a multistory commercial center at the corner of Innes Ave. and the shipyard. Create visual interest by staggering levels and providing rooftop piazzas in the center.
4. Take advantage of the waterfront.
- a. Plan for a marina in the future, when the economy of the area has become strong enough to support it. It should be located on the Peninsula by the proposed restaurant (See below).
  - b. Design the sea wall to provide convenient fishing; particularly the corner that juts out into the Bay.

#### Implementation

The parties most directly involved with the implementation of the above scheme for India Basin are the San Francisco Port Authority, the PG&E Company, the San Francisco Bay Toll Crossing Commission, the State Highway Department, the San Francisco Bay Conservation and Development Commission, the San Francisco Department of City Planning, and the Hunter's Point Redevelopment Project. The priorities for spending and construction of the park are in the order in which they are listed above. As many residents of Hunter's Point as possible should be employed in the detailed planning, construction, and maintenance of the park.

#### Recommendations for further study

Methods of keeping the park safe should be investigated (vandal proof fixtures and improvement of community-police relations by using residents of the area as policemen and park personnel).

If available, Black architects and contractors should be used in the designing and building of the park.

Methods to involve residents of Hunter's Park as owners and employees in the commercial life of the park should be looked into, after the types of commercial activities desired

have been determined.

The community center should be carefully planned, so that it provides services that will complement, not duplicate, services offered by other centers in the area.

Table III-1  
ESTIMATED COST FOR INDIA BASIN PROJECT

Phase	Development	Est. Cost
1	excavate into final physical form and landscape (install sprinkler system and seed grass).	\$850,000
2	plant trees in ratio of 5 new trees to 1 grown tree	10,000
3	build sea wall and lookouts	200,000
4	landmark	
5	parking	500,000
6	community center	2,000,000
7	restaurant	1,000,000
8	commercial center	1,500,000

Comments: The cost estimation represents our most intelligent hunch and is meant as a guideline to reinforce our order of development projects. We might also add that our strong intention, had we continued along these lines, was to involve the Hunter's Point community as fully as possible in the developments, thus reducing total costs and/or providing jobs for their community.

## B. POLITICAL ASPECTS

### Introduction

There appears to be two distinct alternatives for inputting a more accurate assessment of a community's needs to the process of planning programs for that community. One alternative is the community advocate. Incorporate a person who can realistically represent the needs of the community to the planning agency. He might be a representative to the Mayor's office, the City Planning Department, or the Redevelopment Agency. He should be someone who has lived in the community for some time and can honestly function as an advocate for its needs in employment, education, transportation, housing and so on. One model for the sort of advocacy intended can be found in the writings of anthropologists Saul Tax. In developing his concept of "action anthropology" he has formulated the idea that the anthropologists should first do his study of the neighborhood and then, rather than simply writing up his results, should actively become the advocate of the needs of that neighborhood.

This alternative has the advantage of forcing a relatively small amount of institutional restructuring. The advocate would be desirable over direct participation when time is an important factor in generating plans, and when the degree of technical sophistication is great.

The major problem with such a system is that the individual will be identified within the community as an extension of the external agency. This may impede communication with people in the community and will make him a certain scapegoat for ill feelings when things go wrong.

The second alternative is direct community participation. This alternative places the responsibility for planning directly with the people in the community. They must identify the problem, generate a program and be prepared to implement it. This does not preclude outside assistance in the development

of a well-researched and realistic proposal and a strategy for financing it.

This alternative is only realistic with significant changes in external agencies. Funding has to be highly flexible to be able to respond to community initiated ideas. Furthermore, community control of the program implies a minimum of "strings" attached to funds which must, invariably, come from outside the community.

A critical factor to the success of this alternative is that the community be an effective agent in administering its programs. This means a degree of internal coordination must exist which is rarely found at present. The community must be able to pull its factions together and accurately assess its needs independent of where it thinks the money is. The tendency for one small group to take command may not be insurmountable given sufficient inputs from outside the community and criteria for funding that emphasize broad community participation in the planning over what the results of the planning are.

The strength of this alternative is that it presents the greatest possibility that a broad sampling of people within the community will be involved in the process and feel responsible for its results.

1. The importance of how decisions are made - Those who have sought social progress through urban renewal must face up to the possibility that the government's inability to effectively redevelop low income ghettos may not be due to its inability to make the best decisions regarding renewal programs; for, those programs have invariably been directed at attacking the physical conditions of urban poverty. From the experience in urban ghettos gathered in this study, it seems that the physical conditions in a community may have far less significant impact on its future development than whether or not its residents feel a sense of responsibility

for those conditions. That is, for the people in the ghetto, the actual content and success of any given program in their community is far less important than how the decisions involved in the generation of that program were made, i.e., whether or not they feel it is truly their program. For the agency outside the ghetto this dictates a thorough re-assessment of who is involved in generating plans, who is involved in choosing a course of action, and who is involved in the implementation of that course and the assessment of its success. Without some fundamental changes in the planning processes currently in evidence, any attempt at redevelopment which hopes to allow for significant social progress will be futile.

It has, by now, become clear to all that no external agent, no matter how wise or benevolent, can lift those trapped in our urban ghettos to substantial economic betterment; they must do it for themselves. What has not been concomitantly recognized is that the greatest impediment to such self-betterment is not the current conditions of sub-standard housing, inadequate schools, and insufficient job opportunities, but the more elusive results of living so totally isolated from the rest of our society. The characteristics of this social anomaly cannot be neatly pinned down other than: (1) a monumentally meager understanding of the operation of the world outside the ghetto, and (2) an overwhelming sense of entrapment within it. This is not to say that the conditions must not be improved, but all attempts to repair the physical conditions first and let the attitudinal changes follow have failed miserably. If people who are currently directing the rebuilding of our cities truly care for the people in them, they must recognize that problem for what it is -- an overwhelming sense of impotence and disenfranchisement which can only be countered by true self-determination.

This self-determination cannot wait until economic and social parity has been achieved; the people in the ghettos will not let it be so. The War on Poverty has, in the eyes of the poor, been lost; and the next war will not be on paper. The young in ghetto situations demand power now -- power over their own lives, and power over the plans which will affect them.

The foremost task of the community is to build itself into an effective agent, capable of generating realistic plans and supervising their implementation. The first objective must be one of internal organization and coordination, (e.g., the Mission Coalition Organization). The resources are limited and little conflict or duplication of effort can be accepted. For many communities the best mechanism might be a coalition type organization which can draw in a broad spectrum of existing community groups for the purpose of creating a more powerful pressure group. Particularly in black and brown communities. The desire for unification is widely held. Such a coalition will derive its support from its ability to effectively present a unified front to bodies outside of the community; yet it must also be capable of subtle reorganization of the community, channeling existing movements into specific fields of action. It must build on what exists: the community groups, the less identifiable movements, the hatred for the San Francisco Redevelopment Agency, or whatever.

It is clear that such organizing requires exceptional talents and experience. In most communities, organizers cannot afford to be figureheads, to become too clearly identified with any particular group or program, particularly an extension of the government like EOC. For to do so is to risk one's effectiveness on the feelings of the community group or program. Such organizers must work beneath the headlines, yet be capable of generating the necessary

community support. They must learn to motivate without raising expectations above a level which can be surely met. Since such a level will often be very low, most sources of effective motivation will be against someone or something rather than for something. Frequently, the people will only be able to rally together during times of immediate crisis. If this is the case community organizers must be utilized to start something with some permanence. It may be very difficult to find such leadership in the community.

2. Community participation in the planning process - It may be argued that the approach of the Economic Opportunities Council, the San Francisco Redevelopment Agency and City Hall has been to confront the problems of the poor in San Francisco where they are: in the Western Addition, in the Mission, in Chinatown, in the South of Market and in Hunter's Point. But the results of the efforts of these agencies have only confirmed the inability of people outside the "target area" to generate programs which meet the needs of the poor in San Francisco.

The EOC has been, in effect, trapped between the communities and the federal government. They have been the local extensions of the War on Poverty, and, as such, they have unavoidably been identified with the government and the failures of federal attempts to eliminate poverty. The people from the ghetto who have attempted to work with or for the EOC have been left hanging -- often discredited within their own communities as a result of having participated in the administering of federal projects which have repeatedly fallen short of the communities' expected or government-promised goals. To engender trust within their community, these resident area workers must continually disavow affiliation with EOC. The most glaring lesson to be learned from the results of the EOC operating in poverty areas is that any person from the ghetto who decides to work with the "Man" -- the

symbol for all that is "White" in society -- has taken what often amounts to an irrevocable step toward actually becoming "the Man" in the eyes of his own community.

The accomplishments of the Redevelopment Agency present an even clearer failing of the current planning processes. One generalization which became poignantly evident during the course of this study (particularly in the Western Addition) is that redevelopment in San Francisco has too often concentrated on physical renovation at the expense of meeting employment inadequacies and educational inequalities. To allow housing redevelopment to come too early in a target area's complete redevelopment seems to preclude any possibility of meeting the more elusive and complex needs of the people in that area.

A preoccupation with physical appearance in urban redevelopment may be inseparable from a planning system which places the responsibility for generating plans, choosing a course of action, implementing that decision, and evaluating its progress on people external to the actual area where the effects of that decision will most acutely be felt. Such persons rarely understand the needs of the community under consideration. But, more fundamentally, they invariably seek solutions; they invariably start with a presupposition, either explicit or implicit, as to what the target area should be like and then proceed to draw designs on paper that will lead to that end. Plans which are so intended are conceived only to bring a given area up to some standard of attractiveness which is acceptable to the planners.

The concept of "maximum feasible participation" was given much attention during the early stages of the War on Poverty. However, the utilization of this concept was precluded by its perceived inefficiency. But, the definition of "efficiency" is, to a great degree, a function of the criteria which are applied in the evaluation of the success of any

given program. The desire to show speedy, easily measurable progress in urban redevelopment has, in many ways, allowed for physical renovation to become paramount in redevelopment strategies. All too often, we have championed "maximum feasible participation" on the one hand and evaluated social progress by the number and quality of new housing units on the other. If one accepts the primacy of community involvement in the planning process, one must concomitantly seek new criteria for evaluating the "success" of one's programs -- criteria which are consistent with that initial objective and aimed at promoting the development of the people in the target area, not the conditions in the target area.

The conclusion is simply that to adopt a philosophy which dictates the problems of the ghetto must be tackled on their own real estate is insufficient if that philosophy is not accompanied by a new orientation toward planning and decision-making. The call for those who would rebuild our cities as viable human habitats is to care most for how urban redevelopment is undertaken, and not to what goal it is ultimately directed. To sustain the current priorities which have set physical and city macro-economic ends first may well result in a well-planned urban center, a sterile mecca for tourism and high finance; we would, then, be left with the task of planning for the resident inhabitants. The alternative is to focus on the process of redevelopment -- to allow for the individual communities to build themselves into effective agents for their own development, and to create an environment in which they can realistically manage funds which must inevitably come from outside the community.

3. Funding Criteria - If direct community participation in the planning of certain types of programs is to be viable, there must be some fundamental changes in the current funding mechanisms and criteria for funding. Unwisely directed funds, just as funds inadequate to the objective of a program, may

often do more harm than good. From the perspective of a perceptive community organizer the government's attitude in funding urban programs has been one of "divide and conquer," effectively keeping the poor people poor.

The position of the agency external to the community must be not unlike that of an institution supplying venture capital for a prospective business enterprise. There can be only one initial decision as to whether or not to fund a program, and then the people in the community administering it must have freedom in choosing their own criteria for evaluation of its progress. Without this there can be no such thing as community control. For, if they can be manipulated by the funding agency through strings on the money they are using, they, in the eyes of the community, will be nothing more than an extension of that agency. If the program fails miserably it will be viewed not as the community's failure but that of the external agency; and nothing whatsoever will have been accomplished, either towards the program's objective or towards a more realistic understanding in the community of their problems.

The need for a new orientation in funding decision making is also apparent. New criteria must be evolved for such decisions which are directed away from a judgement as to the goal of the program, what it can accomplish to resolve the conditions of the ghetto, and toward an evaluation of the representedness of the community group submitting the proposal, how the proposal was generated (what sort of research and expert inputs external to the community were included), and how it will be implemented. This is not to say that the goals of a proposal are not important. They will be vitally important to the people in the ghetto. But, the need for community responsibility for such projects demands that the appropriateness of the goals be judged within the community, with hopefully a realistic eye to the compatibility

of the project with those in other communities.

Another characteristic of the desired interaction of community and funding agency is that a proposal should specify a minimum budget, below which it cannot function. If this minimum budget exceeds the money that is available, the proposal must be returned to the community to be pared down and resubmitted with a more realistic budget. Such will be the case when competing proposals from different communities are equally acceptable by the criteria evaluating the sponsoring community groups and there is simply not enough money to go around. This will put a great burden on the community to be able to effeciently reassess its program and rework its finances; the need for effective financial advising is again clear. The key point here is that no program should be supported with funds totally inadequate to the expectations of its planners. It is much better for the community planners to set their sights a bit lower and maintain a realistic expectation for the results of their program than to run the almost certain risk of "over promising" either to their supporters or to themselves.

The implication for the institution is the need for highly flexible funding mechanisms which can respond to community initiated programs. There is reason to believe that such a financing requirement might be best met with a highly centralized city financing system where decision making authority on whether or not to fund projects is vested in relatively few, but well guarded, hands. It seems that such community needs demand considerable shift from the decentralized state of current city administration. But, such shifts must be carried out with utmost care to not allow such power to be entrusted without sufficient checks.

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#### 4. Specific Community Organizations

##### 1. Western Addition Community Organization (WACO)

##### Improvements in Western Addition Organizations -

The purpose of the redevelopment of the Western Addition is to achieve a racially and economically integrated community. This cannot be accomplished by transforming the present people of the community into new buildings. WACO should recognize this fact. The community can be improved by upgrading the economic status of the individuals. In this manner the people could have the choice of remaining in the newly constructed community or moving elsewhere to more attractive areas.

Due to its lack of political and economic power, WACO will at best slow down the redevelopment process in the Western Addition according to the plans of the San Francisco Redevelopment Agency. WACO could probably accomplish more by trying to work in the system instead of fighting it. An example, WACO could work with their own people in the problem of relocation of families due to reconstruction instead

of trying to stop the process.

WACO does work with and in WAPAC. WAPAC could be further expanded with more WACO people, not necessarily on the federal payroll. In order to get better working conditions, a goal should be to put WAPAC and the San Francisco Redevelopment Agency - Western Addition Branch closer together, instead of being blocks apart in separate buildings.

WACO should strive for better organization and be willing to learn from other community organizations such as the Mission Coalition. A defeatist attitude was expressed by the comment of a Western Addition community leader. "We could never attain the status of the Mission Coalition. They don't have our problems. Besides, they have people in City Hall working for them." A more positive approach would help WACO.

ii. The Mission Coalition Organization - This organization occupies a unique place among the ranks of San Francisco pressure groups in that it has achieved both power and effectiveness.

To suggest ways of increasing the effectiveness of MCO would be pure speculation; analyzing the factors which contribute to the evaluation of the MCO as a successful pressure group is more important. There are several factors that help make the MCO a powerful organization:

1. Since its conception it has been recognized, at least informally, by the city of San Francisco. The defeat of a Mission District urban renewal plan by a previous neighborhood coalition was important in establishing the necessity for the city to give this kind of recognition.

2. An outside, trained, professional organizer, Mr. Mike Miller, was chosen by the MCO leadership to assist them in building the organization. His skills in staff and leadership training, and the clear separation of staff and leadership functions were important in developing the organization.

In contrast to other neighborhoods, where many staff

people usurp leadership roles, the MCO leadership knew that the organization was theirs and they had to run it.

3. The leadership recognizes that it must work on many issues, and that it must relate issues in one problem area to issues in other problem areas. In doing this, the leadership has expanded the interest of many participants in MCO so that a cooperative atmosphere of mutual assistance has developed in the organization.

4. A structured organization is necessary for successful community organization. The MCO is a broad based, democratic organization. It is a coalition of neighborhood groups. The MCO paid staff assists member groups and organizes new groups along the lines of the interest of the people who participate in these groups. An annual convention provides a base of legitimacy for the elected leadership so that they have a right to speak for the community. All neighborhood organizations are entitled to attend the convention and vote for MCO officers.

5. Last, but not least, different groups in the Mission recognized that their community problems and enemies were stronger than their differences and were willing to work together in a united front to attack these problems and enemies. The MCO provides the framework for working together.

The skillful leadership of MCO President Ben Martinez was instrumental in linking the many groups in the Mission together. The elected officers, volunteer committee chairman and members have raised issues and cooperated to achieve victories on these issues which increase confidence in the organization and lead to a continued growth in the pace of participation in the organization by Mission residents.

### iii. Sunset

A community organization such as the Sunset-Parkside Education and Action Committee is effective only to the extent that it advances the perceived interests of the Sunset area residents.

The real power of a community organization lies in the ability of well-informed and concerned people to be able to define their own problems, not just select solutions from those judged acceptable to City Hall. But in order for SPEAK to generate the broad base support needed for effective community problem solution, it must address itself to the issues that people are concerned with now. It then must be able to show the Sunset residents that it can be successful in helping them to get the results that SPEAK members have decided they want for their community.

To judge SPEAK's effectiveness in isolating and addressing the primary concerns of the Sunset residents, a poll was conducted by the staff of the Stanford study groups involved with Cultural Patterns and Community Desires.

Questionnaires were evenly distributed to four hundred residences in the four census tracts that form the major portion of the Sunset area. One section of this questionnaire addresses itself to the potential desire of the Sunset residents to be represented before city government by a community organization. When asked the question, "If you had a grievance concerning city services or policies, what would be the most effective way to make your grievances known and to get action"? Over half of those responding preferred a "Sunset community pressure group".

The responses to this survey indicated that the three top community concerns can be ranked as follows: (a) better protection against crime (very strong response), (b) increased educational quality, (c) and better public transportation.

Integration questions brought a variety of responses showing strong opposition to integration through school bussing, counter-balanced by substantial desire for integration through other means. There also was a small amount of support shown on the part of some residents who are in favor of integration through bussing.

Of the three top issues selected by the Sunset public,

SPEAK has an active task force assigned to each. SPEAK also has a task force assigned to the Taxation question that is known to be strongly felt in Sunset. As previously mentioned in Part II of this study, significant successes have already been secured by SPEAK in both the areas of Police-Community relations and Mass Transit. The Education Task Force has reached the stage where it is making presentations to the public and conducting interviews in the schools. These task forces are on-going and will be expected to pick up new projects in their areas of concern as old ones have been completed. SPEAK at least has the prospect of real effectiveness because it has shown that it knows how to address itself to the areas that are of principal concern to the Sunset residents.

It should be noted that integration questions bring a strong but somewhat divided response from Sunset residents. Although an anti-busing campaign would probably rally considered as unsuitable for community organizations. Its advocacy might jeopardize the future "integration by other means", which many residents actively desire. Polarization of the community over this issue could weaken SPEAK's potential for broadly based representation on other issues.

In order to further increase SPEAK's effectiveness, a continuing emphasis must be placed on membership growth. This growth will help to broaden its representative base and increase its financial stability. One of the most desirable ways to do this would be to increase the number of member organizations within SPEAK. This has a dual advantage. For the smaller organization, there is the chance to get other SPEAK member organizations to support the new group's project proposals before city government. And for SPEAK, there is the stability that comes from having strong member organizations that are bound together and perpetuated by primary interests such as the churches or schools. This

concept of stability and effectiveness through organizational interaction also calls to mind the as yet unexplored possibility of co-operation between groups with similar interests in various parts of the city.

A major road block that SPEAK will have to overcome in the future in order to become self-sufficient is financial in nature. Although their present budget is quite small, future plans for a professionally-staffed Citizens Planning Council will obviously require additional funds. Since growth in dues through increases in membership will probably not be able to meet these added expenses, foundation support would be desirable. In order to maintain independence and credibility with the community, governmental funding should be avoided if possible. Foundations should be interested in helping to find out whether this attempt to aid the people to find their voice within a middle class section of a large city that has no particular district political representation can be successful.

#### iv. Sunnydale

The psychology of the Sunnydale area, like many ghetto areas, is oriented toward survival. These people haven't had the opportunity to build an opaque money curtain around them with which to brunt hard reality - the hard reality of poverty. Although wizened in this street sense, they have a lot to learn in the arena of "organizational sense". Although residents acknowledge that power will come through unity, the actual method of effective unification, organization, is foreign to them. The people's lack of education and experience in management or corporations has definitely contributed to their naivete here. Also most communities are structured basically from family units. However, the family units in Sunnydale, many of them fatherless, are quite irregular.

It is apparent that there are many inherent cultural

factors which can dampen a pressure-group effort in this part of San Francisco. But many of these problems can be overcome with firm leadership. A capable leader could supply the technical know-how, political ability and the enthusiasm with which to overcome the ghetto inertia. Ideally indigenous leadership would be best. But it is probable that anyone with such skills wouldn't be in the ghetto in the first place. All of the potential leaders of Sunnydale, the active leaders of the Citizens League, the Sons of Sunnydale, the Young Black Women for Action, representatives of the EOC and Welfare Rights, and those of the old BEAU organization, express the desire to organize. It seems that what they lack is just the solid technical expertise. Also much of their political talent is warped by the tremendous frustrations which these people daily face. Diplomacy is displaced by hostility toward one another and neighborhood agencies (e.g., EOC). The leaders are antagonized by other leaders: blacks distrust their neighboring whites, not to mention other blacks.

It seems clear therefore that a less than ideal solution must be found. If the leadership can't come from within, then it must come from without. Sunnydale needs the services of a professional organizer. Given that these communities must have pressure groups and that the sooner the better, then this is the only realistic first step. Such a man, working from the shadows, can supplement the innate desires of the area's residents with their own technical expertise.

But Sunnydale is fortunate in having several community-oriented groups that could provide the potential base for a pressure-group coalition. However, since each represents basically different interests and each has a varying state of organization, none can individually become recognized at this time as "the organization." The Citizens' League is the only group that has a written constitution and is probably

the most stable. This group is mainly run by middle-aged white women. Blacks have tended to drift from the organization. Black youth, a very important voice needed in any group which will eventually claim community-wide support, presently align with the Sons of Sunnydale and the Young Black Women for Action, and in times of stress, Welfare Rights. Each of the several organizations in Sunnydale tends to be rather esoteric in appeal and each likes to claim much greater support than exists in actuality. A good leader could perhaps strengthen all of the organizations, smooth over the more minor differences and work toward a unified coalition. In so doing so, undoubtedly the in-fighting would wain and community frustrations could be levelled at more serious outside adversaries.

Another disadvantage apparent in the current Sunnydale organization set-up which could be rectified by a good organizer-leader is the community's total crisis orientation. There seems to be little foresightedness and planning by the leaders. A summer program is something which the community toys with each year. No real action, though, is taken until less than two months before schools let out. It seems that this year no major program will have the chance to get off the ground. Neither funding nor trained staff can be found at such short notice. Not only do the organizations seem to lack structure which facilitates future-orientation, but it also seems that they can't naturally respond to on-going opportunities for new community programs. Recently the areas has been making a bid for a new co-op grocery store. Instead of the Citizens League or one of the other organizations handling the problem, a whole new organization was formed composed of the same community leaders present at all the former issue-oriented meetings. All of this again suggests the lack of a central respected confederation: the lack of current organizational stability and, specifically,

task-oriented committee structure; and finally the community's inability to get direction.

The all-important effort for Sunnydale now is to get an effective pressure group organized. The whole key is in leadership. A leader is needed who has the expertise, the tact and political finesse and the enthusiasm with which to finish the job. The current leaders of Sunnydale must take a critical inventory of the local talent. If the selfless search proves unrewarding, then the second-best solution must be recognized and sought - the professional organizer. With such a man working and living in the community, it would not be long before the residents could afford to dispense with his services and keep the ball rolling themselves. Because of its geographic compactness and relatively small size, Sunnydale should be comparatively easy to organize.

Community organizing, what is needed and what are the obstacles - In order to allow the people of Sunnydale to become an effective agent in planning and implementing programs for their community, many barriers must be confronted. Some are unique to this community and its immediate environment in Visitation Valley. Most, however, are the barriers faced in all predominantly black ghettos, they are rooted in attitudes conditioned over years of life in any such community.

Sunnydale's relative smallness and isolation from other poverty areas present both advantages and disadvantages. The benefits of familiarity are currently outweighed by the shortage of resources. The people know each other and what is going on in the community much more comprehensively than is possible in the Mission or in Hunter's Point; but, the likelihood of locating the desperately needed skills in the indigenous populace is much less. Although bringing the factions of the community together is a less ambitious task than in a larger community, their collective power will

probably also be less.

A housing project presents uniquely institutionalized obstacles to keeping skilled people within the community. As long as anyone who earns more than a certain poverty minimum, (this information could be gathered from Mr. Mosley, the manager of the Housing Authority in Sunnydale at 585-7837) income must leave, there is little hope of changing this situation. If a considerable improvement of the economic mobility of large numbers of people in Sunnydale is ever achieved, the result will only be a much more transient populace for as earning power spreads, more and more residents will be forced to leave.

One has to decide whether or not a housing project should be, at best, a permanent way station for the economically deprived or a more stable community where the potential to hold onto residents is rising along with the economic capability. If the latter is desired, provisions must be made to allow for significant housing improvement as the demand arises. In Sunnydale this is not an unrealistic idea.

Given that for the immediate future (say 5-10 years) the current absence of skills will not be altered, many community leaders will continue to come from outside the community. Such persons have to establish their concern for the community, a certain degree of permanence in its activities and a background which allows understanding of Sunnydale problems. Men like the Youth for Service workers, George Davis and Tony Harrison, have done a creditable job of this among the young blacks. Others, with comparable talents and background have had their ideas rebuked by the Sons of Sunnydale. The main distinction seems to be that Davis and Harrison have had sufficient exposure over a period of more than a year to be recognized as members of the community. Without this time to establish themselves with groups like the Sons of Sunnydale and the Young Black Women it may be well nigh impossible for anyone from outside the community to achieve

an influential position.

Like EOC workers elsewhere in the city, Southeast Poverty Commission workers in Sunnydale find themselves caught in the middle, yet inextricably associated with the government and sincerely concerned about the problems of the community. Though most of them live in Sunnydale they currently have little or no influence over the younger residents as represented in SOS or Young Black Women. Their one strong tie is with the Citizen's League, whose active leaders share a similar perspective -- with most of the EOC workers. They clearly recognize the need to generate greater cooperation among factions within the community and the obstacles to such organizing, yet they are relatively impotent in initiating the required changes. Any organizing attempts they make will be viewed by the young men and women as artificially imposed from outside rather than coming from within the community and their established organizations. Furthermore, they are figureheads of the matriarchy against which young men and, to a lesser extent, young women must push to establish a more male dominated leadership. It should be noted that Mrs. Herrera and Mrs. Frierson (who now works out of the Hunter's Point office, but was previously supervisor of the Sunnydale branch) are acutely sensitive of their position and make every effort to align themselves with the young on critical issues.

Any thrust toward pulling the community together which might have some chance for succeeding must come, at least in part, from within its most dynamic element -- the young blacks. The need for black unity is widely espoused, but a lifetime of conditioning in the ghetto cannot be completely overcome with a few years of black pride. The idea that everyone must be involved is contrasted by the fact that most youth groups grow out of one man's charisma and too often, his personal "power trip". This further presents enormous

barriers to getting different groups of young blacks to co-operate if even one of the respective leaders feels his turf is being infringed upon.

Aside from personality clashes what are some of the more subtle reasons for the inability of young blacks in Sunnydale to initiate community unification? One seems to be the inability to competently understand the environment outside Sunnydale and realistically assess the obstacles it presents. Most young black leaders are constantly "over promising," in attempts to motivate their co-workers and establish their leadership they induce totally unrealistic expectations. This not only angers the few present who have a more realistic understanding of the situation, but it sows the seeds of inevitable frustration and disunity among those who adopt such expectations. More often than not, this is not done intentionally, but is merely reflective of the total isolation from the motives and workings of our society characteristic of those raised in Sunnydale and places like it.

Less this be underestimated, one example should suffice. In the following discussion regarding the reopening of the grocery at the corner of Sunnydale and Hahn as a community coop, it is noted that the previous manager had been grossing about \$35,000 per month before he gave the store up. A young man of about 25 who was quite intelligent insisted that this was the profit that the man was making. The fact that he was a white man from outside the community who fit the classic stereotype of the white exploiter so long found in black communities made it perfectly acceptable to this young man to think that this manager of a medium size community market could be making \$400,000 per year. He further insisted that it was due to the robberies and other thefts that made the ex-manager quit his business, but that he simply made enough money to move his business elsewhere.

Another indicator of the operational disability of young

men and women raised in a community like Sunnydale is an attitude that repeatedly says, "we know what is needed in this community, all we need is money to do it." This attitude is, no doubt, partly defensive. Young blacks have come, and justly so, to a point where they feel that they must do it all for themselves. Yet a life of living off the monthly welfare check has also contributed to the oversimplification that money is all that's needed. Though they repeatedly renounce it, as long as they continue to feel that gifts of money are so vital to every aspect of their social and cultural progress, the young blacks in Sunnydale will continue to feel a deep and frustrating dependence on "the man."

Perhaps the greatest impediment presented by this preoccupation with money is an impediment to working with people from outside the community who do not have money to donate (but can compensate for some of the resources absent in the community). The absence of skilled manpower and of an effective community organization are two of Sunnydales' first barriers that must be surmounted. Without this, more money will just go down the same drain that federal funds have been going down for the past years. Yet, there are signs of an awakening to this as the key problem. Though no one seems to know how to do it, a few are really grasping the implication of the black power movement; that the ghetto must build itself up, without the government's assistance, to a point where it is strong enough to face its enormous tasks and financial benefactors as independent agents. One occasionally finds young black mothers in Sunnydale admonishing their men in public meetings for not establishing the home as the building block of the community. During the crisis period in late May, following the bombing of the neighborhood drug store and the resultant police retaliation, a black mother unleashed about twenty epithets not dissimilar in style to those of other black women across the country.

Yet, she directed her anger at the young black men sitting across the room, facing her in the circular seating arrangement. She said, "I don't believe in no God, the black man is my God...I only wish he'd come around a bit more often.." Attacking the behavior of many men which leads them to band together to impress their black pride with raised fists at rallies, but precludes expression of similar pride in raising their children, she concluded by saying, "...how can we ever do it with a big bit, when we can't do it with a little bit."

Sunnydale Co-op - There are two community programs with which members of our research team have been involved. They are illustrative of 1) the type of program that can be realistically sought, 2) the current interests of people in Sunnydale, and 3) the barriers one must be prepared for in such ventures.

A Cooperative Grocery in Sunnydale - Sunnydale needs a local source of employment and training, capital generated and kept within the community, an enterprise which could introduce residents into business. Sunnydale also needs a local market, and there has been talk for a long time of reopening the Little Village Market at Sunnydale and Hahn Streets as a community cooperative.

Mr. Mosley, the manager of the Housing Authority, finally got the ball rolling by contacting the owner of the store, representatives of Safeway markets, various community leaders, and succeeded in setting off a chain of community meetings to discuss the possibilities and alternatives. Two students from Stanford, one in the Business School and one in Industrial Engineering, have also been involved in these discussions which to the date of this writing have merely explored the options and come to no decisions.

The store is of medium size and could, at the minimum, provide a convenient and perhaps economically attractive, grocery for people in the project and for the residents to

the east of the project. It could also employ about twenty people from the project, and serve as a training center for residents in clerking, butchery, and other related jobs. If operated as a true community coop, it could be controlled by people from Sunnydale and set an example of successful community involvement and self-determination.

A true community coop is owned by shareholders who are predominantly residents of the community. The prices are set so that profits are very small, making the store attractive to shop in. The profits that are made are distributed to the shareholders in proportion to their expenditures, more as a psychological boost than as a financial one. If the community is unable to produce the required capitalization, it might borrow a significant portion (say 50%) as a permanent debt to be repayed over maybe ten years. The conditions for securing such a loan involve a justification of the store's viability; having good management, a good market, and perhaps a powerful benefactor to guarantee liabilities. Finally, a true community coop must be controlled by the community or its chosen representatives, and control is synonymous with money. If initial control is impossible, it must be remembered that if the community cannot successfully buy back the store from the mortgagor, it will never gain control.

A couple of points about the grocery business in a low income area are worth mentioning. Overall, the grocery business is a very risky one, operating on a thin profit margin at competitive prices. In an area like Sunnydale, an experienced, competent, honest, personable, (and ideally, local) manager is essential to successful operation. Labor and overhead must be carefully controlled; and spoilage, pilferage, and robberies must be eliminated if the store is to survive. The store must enjoy the faithful patronage of a large number of customers for whom it is conveniently located.

There are several avenues of financial assistance which might be pursued, given that the community is unable to raise the entire initial capitalization by selling shares, holding benefits or whatever.

The first is to secure a loan with no assistance in running the store. This would probably be done through any of a variety of sources of minority small business loans, e.g., the Small Business Administration. In the mid-peninsula, Varian Associates operates "Palo Alto Capital" and Arcata Nacional, operates "Arcata Investments" -- two Minority Enterprise Small Business Investment Corporations (MESBIC's). The MESBIC's funds are 72% guaranteed against loss by the federal government. Nevertheless, the supply of funds is limited and must be used for the maximum overall benefit to be discriminating in issuing loans.

A second source of capital could come from a large grocery chain which would assume the risk, provide the capital, experienced management, and assistance in stocking and operating the store. The latter services are of equal or greater importance to the store's successful operations; and although they preclude initial community control of the store's operation policy, arrangements for the training and eventual employment of a local manager can, perhaps, be made. The big long-range question is whether or not the community can ever gain real control, i.e., controlling interest, from the initial benefactors.

The Third Street Coop in Hunter's Point apparently worked out some similar relationship of Safeway when it was going out of business about 7 years ago. There are some aspects of the relationship which are hazy. But, the known facts are that Safeway supplied the current, very competent black manager, Mr. Scott, from its management training program. Safeway "sold" a complete stock to the store for \$1.00, and may continue to offer attractive wholesale prices. To

protect its investment, Safeway has probably maintained a covenant regarding its operating procedures. What, if any, plans exist for Safeway's eventual withdrawal from operation are unknown. However, it is clear that this store is not really a community coop because only about 15% of its shareholders are regular patrons.

It seem clear in Sunnydale that neither the money nor the management skills will be found in the indigenous populace. The Little Village Market would require between \$100,000 and \$200,000 capitalization for inventories, working capital (shelf and backroom stock), and credit sales. With about 800 families in the project and another 500 from the towers and surrounding residences, you would need an average of \$100 per family. Furthermore, to put up 50% of the capital required would still be beyond realistic expectations by a factor of ten. The likelihood of locating a competent local manager is no better: a person with such skills would not live in a housing project. The only hope would be to find someone who had lived there or otherwise felt some commitment to such a community (as many young blacks do). Even if such a man were found, it would still be difficult to make the store look stable enough to be attractive. For operation in Sunnydale would run a continued risk of robberies and other destruction. Whether a community coop would be more resistant to this is uncertain; many potential threats come from outside the community.

Assuming that competent local management is neither forthcoming from within the community nor attractable from outside the community, a chain grocer should be encouraged to cooperate in reopening the store. As of this writing, the owner was most anxious for the store to reopen, even at the expense of foregoing the monthly rate of \$650. With this attraction, a grocer like Safeway (though Safeway has already refused on the grounds of competition with its own store on Bayshore

Boulevard) might be induced to stock the store, supply management, employ local people and train a local manager and assistant manager. If this benefactor had adequate insurance against his investment, he might be willing to get involved for the good public relations and for the eventual whole-sale business. An arrangement might be made for withdrawal of the outside manager after a period of sufficient training of a local person, (perhaps two years). Ownership and control would remain with the chain grocer, but an arrangement allowing the gradual purchase of the store might be considered. However, this would take a considerable time, and while the community owned less than 50%, it would run the risk of losing everything if the store went bankrupt and into receivership.

Another alternative may be to open the store soon and only stock non-perishable, "sure sell" merchandise. Orders for meat might be taken and made with a wholesaler, to be picked up the following day. This would put a minimum burden on whoever is running the store. Assistance with keeping the books and general advising could be obtained from business students working through the Business Development Administration with the Stanford Business School.

It is fundamental to any such community venture that the people cooperating in the planning sessions have a realistic understanding of the obstacles confronting them and their chances of success. The naivete that most people, especially the young, in Sunnydale have regarding all aspects of business has developed over years of isolation from the mainstream of economic competition in our society. They must acknowledge their own insufficiencies of understanding -- something many of the young blacks in particular are reluctant to do -- if there is to be any chance of effective cooperation with people from outside the community (as the Stanford business students) who can contribute the expertise which is

lacking. Everyone involved in the planning sessions for the Sunnydale coop must realize the essentials for a successful enterprise are men, markets and money, usually in that order of importance and scarcity.

Summer Program for Sunnydale - In a community like Sunnydale, every summer is a potential crisis. The kids are out of school; the little ones are on the street, the teenagers swell the already bulging ranks of the unemployed, the hot days bake growing frustration, and the warm nights keep everyone on the streets. A summer program that could involve people from all strata of the community is desperately needed. The following suggestions represent a synthesis of ideas developed by Mark White, who works in the Community Health Center in the towers, and experiences from a summer program run for nine years in East Palo Alto by Nairobi College. It is certainly not the last word in a summer program for Sunnydale, but elements of it should be tried.

The basic intent is to employ young residents, primarily high school age young men via the Neighborhood Youth Corp (NYC) summer jobs to tutor and lead small groups of elementary school students in a structured daily program. This program could have three morning sessions, then lunch, followed by two more sessions in the afternoon.

However, before the high school students would be capable of running something like this, considerable care would be required to train them. The East Palo Alto program begins with a small group of administrators who work with a group of college students who, in turn, train the high school students and work as team leaders among the corp of young tutors.

Unfortunately, in Sunnydale there are very few college students, and it would be necessary to attract young men or women from outside the community. Furthermore, to find someone with experience in Head Start programs or similar "cross-teaching": ventures within Sunnydale is unlikely. Neverthe-

less, these resources are available to the community if it can make use of them. Many college students are unable to find good paying summer jobs. Even if it were impossible to pay them, room and board might be sufficient pay to entice some, particularly young black students, into Sunnydale for a summer. It is quite realistic to seek academic credit with cooperation of their institution. As regards experience in such efforts, there are many sources which might be tapped in an advisory capacity. Neighborhood tutorial program directors in the South of Market area and in East Palo Alto could be available to help set something like this up; and people within the education schools at Stanford, San Francisco State, and Berkeley might be willing to contribute also. What would be needed is one or two intelligent and energetic full time community workers to organize and administer such a program.

The greatest obstacle to ever getting a really effective summer program going is the inability of the various groups in the community to get together on what they want to do. This summer the Citizens' League, the Sons of Sunnydale, the Young Black Women, the Visitacion Valley Community Center all have proposals for their own program. These proposals compete for the same facilities (e.g., space in the Housing Authority Building) and often the same funds (e.g., NYC summer jobs). No program of the scope outlined above will be possible unless these groups can get together in January or February and start developing their ideas and soliciting support.

Resources to Draw Upon - The resources that should be investigated are:

1. For financial support:

a. Neighborhood Youth Corp summer jobs as distributed through the Board of Education ("in school" jobs) and the Mayor's office and the City Youth Council ("out of

school" jobs).

- b. The bill for Education and the Culturally Deprived -- Title I programs.

- c. OEO and other federal sources.

- 2. For college students:

- a. The Educational Opportunities Program counselors at San Francisco State and the University of California at Berkeley.

- b. Mr. Jim Simmons, Assistant to the President for Black Affairs, Stanford.

- 3. For experienced counseling in organizing a program.

- a. South of Market Tutorial Program.

- b. Nairobi College in East Palo Alto.

Most of these resources were discovered by the students involved with this study. It might be advantageous, if broadly supported planning can begin early for such a program next year, to incorporate one or two of the Stanford students working in Sunnydale into the planning and proposal writing.

## 5. Government

City governments perform several functions simultaneously. They must provide services, take care of the city's physical development, provide a program of civic activities, and take the lead in nurturing whatever unique qualities the city is proud of. Corresponding to these functions, there is a wide array of different kinds of decisions that must be made, such as should a given piece of property be zoned for a park or for housing, should a highway be above ground or below ground, should additional funds be spent on education or transportation? There are several aspects of these decisions which can be identified for purposes of discussion:

- the degree to which the decision is a question of

fact or preference.

- .the permanence or irrevocability of the project once it is initiated
- .the percentage of total city resources involved
- .the geographical boundaries of the area affected.

Many kinds of government structures have been proposed to address these problems in large cities. Some have proposed that the Office of the Mayor be strong, as in Detroit and Denver where most departmental appointments and policy-making power is centralized in the Mayor's office. Others have proposed that the Mayor's Office be weak as in Los Angeles and Milwaukee. In a weak mayoral form of government authority is divided between a council and the Mayor, or between a council, a Mayor, and a city administrator or manager.

Any change in San Francisco's governmental structure should reflect a need for matching the decision-making apparatus more directly with the specific aspects of decision involved. One of the ways to classify decisions is to order them according to the degree to which the primary issue involves a question of fact, as opposed to judgment or preference. The former kinds of decisions often involve efficiency in the performance of a well-defined task (e.g., what should the height limits of buildings be along the waterfront).

For the past two decades, planners have attempted to devise ideal plans for cities, for housing projects and for highways. Yet the planner's ideal has in practice often fallen short. Large scale public housing for the poor, for example, has been universally a failure. Where planners have failed, it was not for lack of an ideal design but for the failure to recognize completely that an ideal design exist independent of the group for which it is designed. The ingredients of such ideal designs are matters of judgment, of will, and of preference, not objective principles. In the final analysis, sole judgment of a project's success or

failure lies with the people who will live with it. These are the people who will enjoy it or not, who will use it or not, who will disabuse it or perhaps be disabused by it.

For some projects involving judgments and preferences, there are countervailing pressures to the ones described above. Regardless of neighborhood distinctiveness, it is the interaction among these communities which defines the city as a whole. Transportation is perhaps the most obvious example of planning that must be carried out centrally. Yet even in transportation, the system intimately affects the life style of each community through which it passes, and to the extent that it does, community preferences must be heeded. Control must be placed in the affected community, a power to make modifications in the overall plan tailored to the community.

Of significance to the way decisions are made is the speed with which a project can be reversed if a serious flaw is discovered after implementation. Some programs, especially those involving services, can, after a reasonably short period of time, be re-directed if necessary. Constraints due to outside financing may often be considerable, but to the extent that the project is at all under city control, the nature of services programs suggests they can be revamped rapidly, compared to other urban projects.

A housing or transportation project, for example, will endure for a generation or more. Here the need for care becomes most important. The problem of irrevocability requires measures that will prevent good intentions from turning into monuments to man's fallibility. There are no perfect measures to insure that this will not happen, of course, but there are systems which would reduce the danger of serious mistakes at perhaps the expense of delays in time or greater capital outlays. Incorporating sufficient checks and balances into decision making procedures, (particularly for enduring

projects), is of utmost importance. This will mean, of course, that deadlines will not be met, that decision-making could be delayed for several years, and that some projects may be lost forever. These delay costs must be weighed against the cost of a mistake -- twenty to thirty years of penance.

Fragmentation of power is a major problem of government in San Francisco today, and has been for many years. The charter of 1932 (the current working charter) sets up a system of checks and balances so effective that no one office of government could possibly consolidate enough power to gain control of the city. As a result, city agencies tend to operate within separate and independent spheres.

We recommend centralization of power and responsibility for improved efficiency in policy planning and program implementation.

As the chief executive, the mayor should have this concentrated power. With more direct control over the department heads, he could consolidate and coordinate departmental efforts for increased efficiency.

There is currently no overall planning agency in San Francisco which sets priorities and guidelines to be followed by all agencies. Furthermore, there is no provision for overall program evaluation. In particular, the office of the mayor and the Board of Supervisors lack evaluation staffs, and little critical analysis is carried out on either inter or intra-departmental levels. This results in a lack of explicit information about valuable methods and programs which should be encouraged, or worthless projects which should be abandoned.

A critical evaluation program, involving a continuous review of various agency activities and programs to determine their conformity with established guidelines and the principles of sound management, could improve the quality of the

city government. It might be accomplished through the formation of a group of legislative analysis under the Board of Supervisors.

Beyond participation in the electoral process and public hearings, citizen action groups have little political leverage. Involvement too often is limited to an issue-by-issue basis, and groups disintegrate, to be replaced by other single-issue organizations. In this way no political influence is accumulated citizens' efforts are so dissipated that they might have just as well not attempted to win anything at all. Fortunately, single-issue groups are gradually being overshadowed by multi-issue groups such as the Mission Coalition Organization. Gradually these groups are earning the respect of City Hall, and some of their accomplishments have done a great deal for their communities. However, they have won the unsolicited help of the city government. The mayor's office would be wise to create some mechanisms to increase citizen participation in local government.

A "Mobile City Hall" concept would take high city officials or their representatives to the various areas of the city to improve communication between the communities and City Hall. The purpose of these travelling government officials would be not only to educate the citizens, but also to help the government to ascertain needs and attitudes of the city's residents.

Neighborhood Service Centers could function as miniature city halls more completely than the Mobile City Hall. In addition to providing the mayor's office with public opinion, they would offer health and social services for residents.

Election of the Supervisors by district would require the Supervisors to answer to their electors, and would ensure a more balanced representation by change should be formed for this purpose.

### Charter Revision

The San Francisco Charter Revision Committee is attempting to streamline the governing processes in the City by reorganization of the presently-existing governmental functions and personnel. By realigning the bodies of government in its plan, the Committee meets at least three problems: 1) a necessary transition between old and new systems to provide for job security of those directly affected by changes; 2) a need to keep the cost to a minimum for this already poorly-financed city; and 3) the reality that most people will not accept any radical (or even liberal) change in the status quo.

The result is that the new charter would probably bring substantial internal change in the City government but no radical change in San Francisco's problems as a whole, at least not immediately.

The six stated objectives of the Charter Revision Committee are: 1) a clear, concise charter; 2) a more effective Board of Supervisors; 3) effective and responsive executive branch; 4) an effective budget and strong fiscal controls; 5) independent safeguards for honest, fair government; and 6) citizen participation in government.

The first objective would be achieved by cutting out details and making the charter a framework for city government, thus retaining the autonomy from state control that such a document provides. The second concentrates on easing the Supervisors' workloads by allowing them staff (non-civil-service), making them more responsible to citizens by requiring publicity of actions, and directing them to control the executive by increased budgetary and inquiry powers.

The third goal would increase the efficiency of the Mayor's office by allowing him staff also (non-civil-service), bringing the CAO in as Deputy Mayor, and consolidating present departments into distinct executive departments,

administrative and policy-making agencies, and advisory boards and commissions. The Mayor's direct responsibility to the citizens would be increased, as he alone would appoint the directors of these groups.

The last three objectives have fairly straightforward solutions, according to the committees. Number four requires open budget to the public with simplified explanations and an adequate period of time for Board considerations. The fifth provides for a Controller, an Office of Information and Complaints, and a Board of Appeals, all responsive to the need for good government and selected by the Mayor from a "distinguished citizens" panel with Board approval. And the sixth goal would have organized neighborhood groups be encouraged and recognized by their Board of Supervisors, to make the "power of the people" over their government a reality.

By the proposed charter revision, San Francisco will have an organized system of government and a simple, efficient-looking flow-chart of its functions. But although the changes are logical and practical, they will not be enough to meet the needs of this already-struggling city whose citizens are crying for help from their leaders. (See Fig. III-2.)

#### Regional Government

Is regional government realistic?

How would we benefit by the establishment of a regional government in the Bay Area? Certainly the environmental problems plaguing us downgrade the quality of our lives. Waste disposal, air and water quality control, and transportation figure prominently in our overall welfare. The advocates of regional government have devoted their attention and energy overwhelmingly to these problems. Problems of housing, equal educational opportunities, and intrametropolitan financial equity have been seriously neglected. Urban sprawl has been dealt with only indirectly. Population pressures and problems

# THE EXECUTIVE BRANCH

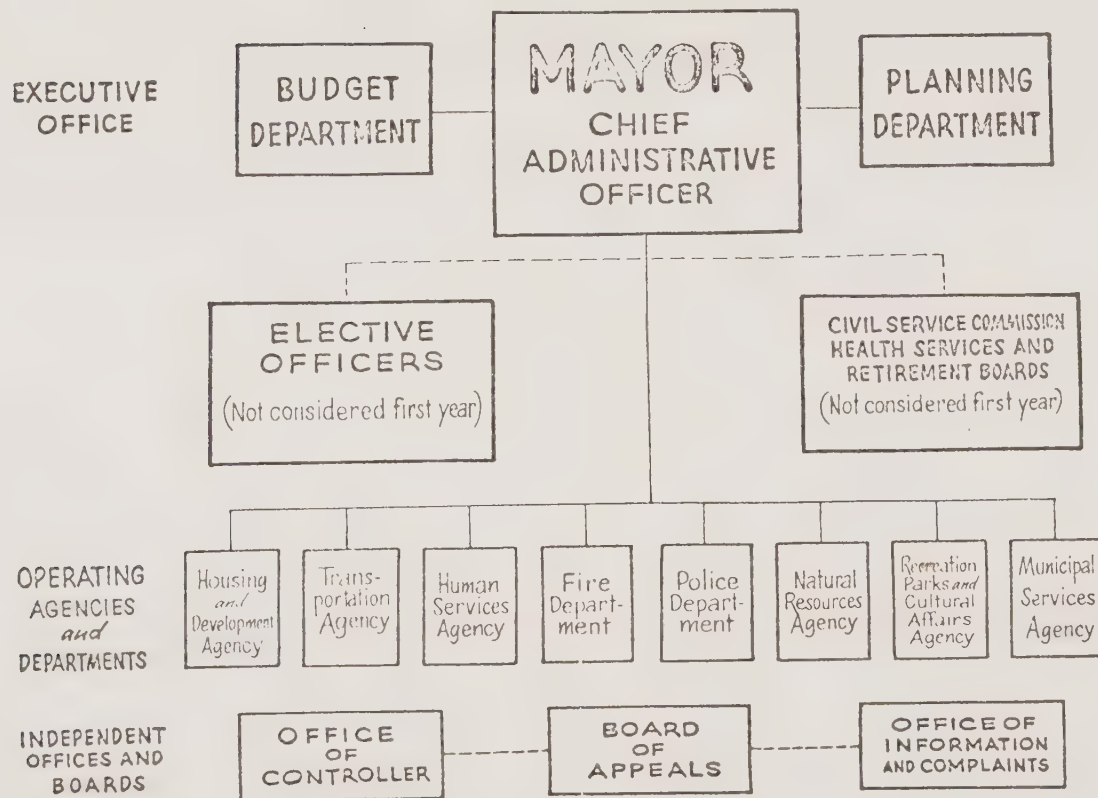


Figure III-2. THE EXECUTIVE BRANCH

have received little attention. The possibility of using a regional government as a clearinghouse for all educational funds within the Bay Area has similarly been overlooked. The present proposals for regional government focus upon three arenas. First, problems of conservation and the environment need to be treated by a government not politically and geographically fragmented. Second, regional government may be one method of rationalizing and coordinating business activities within the Bay Area. Third, regional government may make use of economies of scale in governmental operations. None of these goals should be slighted. Nevertheless, more socially oriented planning should not be overlooked as in the past.

#### Current Proposal for Regional Government

The latest proposal before the State Legislature (AB 2310) would empower a regional government to adopt a regional resources general plan. This plan would have four mandatory elements (sections of the regional plan which would take precedence over any other local plans). The first mandatory element would be a conservation plan for the San Francisco Bay. However, this function is currently performed by the Bay Conservation and Development Commission. Closely linked to Bay preservation is the control of both the San Joaquin and Sacramento Rivers which empty into the Bay. The third mandatory element of the resources plan reads, "An environmental quality plan for the integrated development, management and control of contaminants or waste materials discharged into or deposited in, under or upon land, air or waters within the region." Both of these elements disregard the fact that the pollution problems of this region could be most efficiently dealt with on a river basin basis. Perhaps the State Water Quality Control Board should be reorganized on a river basin basis instead of its present regional basis. Perhaps even state river basin agencies are insufficient,

especially when rivers cross many state borders. It is not sufficient justification for a regional board to say that San Francisco must guard itself against the powerful political force of Southern California. It is not enough simply to say that if the nine Bay Area counties could control crucial sections of the state water system it could also partially control development in Southern California (no matter how much we might want to control this development).

The second mandatory element of the resource plan would be a regional parks and open space plan. It is not at all obvious, however, that a regional governmental agency should perform this task, or that a state board with a regional office would be preferable. The Citizens Technical Advisory Committee on Open Space Land Semi-Final Report to the Joint Legislative Committee on Open Space Lands of the California Legislature recommends a state open space department with regional boards acting on behalf of the state department. Other groups have proposed a special district on open space and parks similar to the BCDC. The price of acquiring the open space lands outlined in the ABAG open space plan (1,800,000 acres) would be close to \$2,000,000,000. Who will be able to provide this sum of money? While it is not our purpose here to advocate either the state or regional board, it should be emphasized that any decision on the usefulness of a regional government (multi-purpose) rests to a great extent on the method used to preserve open space. This is simply because the power to control land use, and this means the power to zone, will confer upon its owner the ability to determine the outcome of this battle against all the problems that have been discussed. There is not a single "regional" problem that is not ultimately related to land use. In this respect, the proposed regional governments will not be sufficient. They may, however, be the most one could hope for under the prevailing political climate. If a governmental body

is to attack and solve these "regional" problems, it must possess the power to control land use. If a regional government is to really succeed, it must inherit the power to zone. In short, it must usurp the most powerful and coveted power of municipal government.

#### Special Districts and Regional Government

There are two district approaches that could be taken to attack area wide problems. One is the formation of a special district which is formed to perform only one function, the other is to form a regional government which would be multi-purpose.

#### Special Districts

The strengths of the special district may be defined as threefold. 1) A special district is the least disruptive manner of attacking a regional problem. When dealing with problems which overlap many political jurisdictions, the most acceptable response is the least response. City and county governments are more willing to accept such districts because of minimal interference with their own powers. It can surely be expected that the more power given to any kind of regional authority, the more resistance will be offered by local government. As testament to this resistance and its strength is the practice of allowing the governing boards of the districts to be chosen by the local jurisdictions - usually from among their own members. 2) Special districts can be created by an act of the State Legislature. Usually they do not require constitutional amendments or voter approval. 3) In theory the third strength is that of clear responsibility. By having one or a few responsibilities, and having those clearly defined, the special district is "...likely to give the public exactly and quickly what it wants."<sup>1</sup> Whether or not you agree with this assumption depends upon your conception of what the public wants. Does the public want a second Bay crossing such as BCDC has tentatively approved?

One might cite also the actions and complaints of citizen groups in Richmond relating to efforts to get the BAAPD to do something about odors from oil refineries as refutation of this theory. We will discuss this more thoroughly under the believed weaknesses of the special district.

However, there are five basic weaknesses or ill effects attributed to special districts. 1) Special districts are plagued by problems of securing adequate financial resources. Most of the special districts in the Bay Area rely upon property taxes and general obligation bonds to finance their activities. As the number of special districts increase, the competition for funds becomes more acute. 2) Special districts downgrade the importance and quality of general purpose government. It can be hypothesized that the fewer the functions delegated to local city and county governments, the lower the quality of the local legislator. Talented and ambitious politicians will want to hold the more influential offices. This argument against special districts can be used to support either total local control or total regional control. We must decide just how important the highly worshipped concept of local self-government is in relation to the problems of the region. 3) The members of special districts are appointees. Appointive bureaucratic agencies are removed from the political arena, and therefore we must consider whether or not the people can exercise sufficient and needed control over them. If a poll of Bay Area residents were to be taken to ascertain the extent of knowledge about special districts and their membership, it is our guess that the results would point to widespread ignorance. However, the potential for more citizen participation is certainly there.

In order to build a strong and vocal public backing for needed reform, both an issue and a leader are needed. And once action has begun, it is crucial that citizen groups sustain pressure. The Bay Area bustled with citizen pressure

groups in the fight to Save the Bay. The issue was the Bay and Bay fill. Leadership was provided by several citizen groups - People for Open Space and Save the Bay Association in conjunction with many League of Women Voters chapters. They were able to generate enthusiasm over a long period of time to keep pressure upon the State Legislature; the Bay Conservation and Development Committee was finally approved and created.

There shouldn't be any difference as to the requirements for future reform in the fields of solid waste disposal, air and water pollution, and transportation. People must know what is happening and be allowed to participate. In this respect single-purpose special districts are found severely lacking. And even if the members of the many special districts were to be elected by a general vote of the citizenry, there is no guarantee that citizens participation would be greater. It is impossible for a voter to keep tabs on candidate running for dozens of agencies and special districts. "Citizens have lost control of their local affairs when they are unable to place responsibility for faulty decisions or inaction."<sup>2</sup> Examples of this loss of control are so numerous everywhere. How many people know who the members of the local county planning commissions are or how they are chosen? How many know of the preponderance of realtors on such commissions?

4) The fourth weakness is governmental fragmentation. While special districts take power away from local governments, they do not consolidate it elsewhere.

What are the difficulties presented by this diffusion of authority? "The general objections to fragmentation in urban areas of water supply...include lack of coordination, inadequate planning, uneconomical development, and overlapping jurisdiction...geographical scope and jurisdiction for comprehensive planning, programming and operation are best achieved through the development of metropolitan water

utilities; or, the assignment of water...functions to a general metropolitan instrumentality. A major weakness, however, of existing metropolitan water agencies is their inadequate scope, a product primarily of a failure to expand jurisdiction to keep pace with regional growth."<sup>3</sup>

With respect to water and the Hetch Hetchy contract system, intergovernmental relations have not always been the best. A good example is the hurried formation of the San Mateo County Water Committee. The suburban cities also tend to neglect their responsibility to invest resources and money into comprehensive planning - that is solely San Francisco's job. All we do is buy the water. There are also technical drawbacks to this contract system. One key disadvantage is that in the supplier-customer relationship, there are no real incentives for the suburbs to cooperate in the construction of the most economic connections with the water source.

5) Lastly, special districts (and special study groups such as the Bay-Delta Study Group) may be overly professional in character. While basic policy is usually set by the politicians on the boards of directors, implementation and plans are decided upon by the staff. Such staff professionals are accused of being too parochial in their vision - they may at times ignore broader ecological or social complications of their particular field of action. We do not deny that cooperation exists between special districts, but we suggest that such cooperation and scrutiny would be far more regular, in fact institutionalized, within the framework of a multi-purpose regional organization.

#### Regional Government

First, what are the disadvantages of or arguments against a multi-purpose regional government? 1) Bay Area Regional Organization (BARO), is politically unfeasible. The State Legislature will never create a BARO. For one thing, it would take too much power away from local governments.

Furthermore, even if the Legislature were to okay BARO, it most likely would have to be voted upon by the nine counties in a special election. Citing many failures around the country, opponents of BARO (they might prefer to be called "realists") doubt that this fourth layer of government would survive the voting test. The bogeys of another layer of government and added taxes would be too strong to overcome.

2) Some people still insist that the problems which were outlined at the beginning of this paper do not warrant regional action. Municipalities and industries are capable of dealing with these problems if provided with state and federal assistance and incentives (basically research and development grants and tax relief). They seem to imply that such grants and relief aren't already possible under the law. Granted, the state and federal governments can do more along these lines, but to say that industrial and municipal inactivity is the result of the lethargy of state and federal government is in part a smoke screen. 3) Establishing a multi-purpose regional government does not necessarily guarantee enlightened comprehensive planning and development. This body will be susceptible to the same political pressures and financial liabilities as are the special districts. 4) By creating a fourth layer of government, fragmentation occurs too - special districts are not the only way to fragment authority.

The rebuttals to these arguments are the following: Disadvantages 1 and 3 are not reasons for not establishing a regional government, rather simply indications of how hard it will be to win the fight for such. And then once the fight is won, how difficult it will be to mold a progressive organization. Objection 2 is simply a display of innocence or the expression of industrial or political self-interest. Objection 4 is as a statement of fact true, but must be considered relative to the degree of fragmentation now being experienced.

The positive benefits of a multi-purpose regional organization fall into three categories. First, the public will be able to exercise more control over it than is the case with special districts. To begin with, establishment of the organization would not only require legislative approval, but most likely require voter approval also. Then in the future, any new functions which the organization might want to add would also be subject to a vote. As the one organization specifically responsible for regional problems, the organization would serve as a focus for citizen participation and criticism. A special district can blame a failure or mistake on another jurisdiction or on its lack of powers, but the organization would have no such cover. If something went awry in one of the regional problem fields, the organization, and the organization alone, would be responsible. Finally, simply because the elective board would be elective (under Knox 711), the organization would be more responsive to public desires (in theory).

Second, a multi-purpose regional organization would consolidate the many fields covered by special districts and agencies. The regional organization in both the Knox and Bagley proposals would allow for the exercise of joint powers. In addition it is hoped that eventually all existing special districts of regional nature could be incorporated within the auspices of the regional organization.

A regional organization would also provide the framework within which more review and coordination of all varieties of plans could exist. While dealing with regional problems, the regional organization would not infringe upon local powers except as they involved the mandatory elements of the regional powers. Problems which are recognized as local by nature would be left to the local jurisdictions. Sufficient care would be taken to insure local jurisdictions of a hearing or review process of regional plans.

Third, if the regional organization is to be effective, its founding legislation will have to provide it with substantial financial resources. The financial liabilities and shortcomings of the districts and agencies would hopefully be overcome through coordination and the income tax. Similarly, the reduction in overlapping functions and the benefits of cooperation, would free the regional organization from lack of staff problems. These two points of financing and staff, we must remember, are dependent upon the founding legislation. Only if that legislation is foresighted enough will these two problems be overcome.

## References

1. Advisory Commission on Intergovernmental Relations. "Alternative Approaches to Governmental Reorganization in Metropolitan Areas." June 1962, p. 52.
2. Citizen Advisory Committee, Joint Committee on Urban Area Government, Legislature of the State of Washington, "Too Many Governments." Metropolitan Politics, p. 129.
3. Advisory Commission on Intergovernmental Relations, "Inter-governmental Responsibilities for Waste Supply and Sewage Disposal in Metropolitan Areas." October 1962.

## 6. Urban Planning

### Decision Making In Urban Planning (Present and Projected)

In this section a description of the current state of planning in San Francisco was presented. The steps of the "planning process" and the various constituencies in the city were outlined to form a framework for discussion. Factors which commonly contribute to the ineffectiveness of many city programs were reviewed. The evidence from San Francisco indicates that the present system of proposing, evaluating, deciding upon, and assessing actions intended to be constructive is unsatisfactory and must be improved. General targets for improvement may be grouped as follows:

- A. Separation and coordination of city and regional planning matters.
- B. Citizen participation in planning.
- C. Discussion and establishment of objectives, generation and evaluation of alternatives.
- D. Representative and informed decision-making.
- E. Implementation of decisions, and measurement of the effectiveness of actions.

A variety of possible courses of action has been proposed to improve one or more of the above target groups. Some of the proposals which have been made are discussed below. Each has attractive features, but none is adequate in itself. Any proposals to rectify the urban situation must recognize the following factors as essential for ultimate success.

1. There must be a tangible commitment to the idea of planning on a long-term basis. This commitment must take the form of adequate financial and staff support, and a substantial degree of independence for the planning function. (At the same time, operation of the city and planning for it must be closely related for effectiveness.)
2. There must be recognition that change is inevitable and that the city must both anticipate and respond to it. The beliefs, preferences, and life-styles

of people, as well as technology, are changing and will continue to change. However carefully goals for San Francisco, and the plans and programs to meet them are defined, they will have to be altered as time passes.

3. It is necessary that the city be examined as a complex entity serving many purposes and providing a variety of services. City maladies are not isolated problems, but are part of an urban web in which demographic, economic, social, and physical factors are all interrelated. This demands planning which goes beyond mere physical design. A "systems approach" is vital to arrive at integrated solutions to multiple problems.
4. Citizen participation must be enhanced and encouraged, in as much as planning must concern itself with goals and objectives in an environment in which these often conflict. The analyst or planner cannot substitute his judgment unilaterally for the right of choice which belongs to the citizens. Mutual consultation, discussion, and evaluation are mandatory.
5. In any planning activity, there is no substitute for relevant information properly gathered, organized, and utilized. Any planning, no matter how sophisticated, is doomed to ineffectiveness if deficient in this respect. The haphazard state of information gathering and availability of data in San Francisco must be eliminated by cooperation and coordination in the design and operation of an information system. This is a difficult but elementary task.

City Charter Amendments: The need for improvement in the planning and execution of city programs led to the creation of the Citizens Charter Revision Committee. The intent of the amendments to the city charter proposed by the committee is to streamline the governing processes by reorganizing present functions and personnel. The present charter and the proposed revisions are discussed in general elsewhere in this report. This discussion is limited to the effects of the proposed amendments on the Planning Commission and the Department of City Planning.

The proposed revisions clearly indicate a change in

viewpoint about the role of planning in city affairs. One of the most important is the relaxation of the emphasis on physical planning alone and the inclusion of the concept of economic and social planning. This point of view is already an integral part of the Planning Department's planning development process, adopted during 1969. The first step of this process is the preparation of a "Basic Policies Report," for which "long-range objectives and policies for the city as a whole" will be developed. The report "will set forth a comprehensive set of objectives and policies for components of the city including: residence, recreation, education, public safety, and health, commerce, industry, transportation and urban design." (Annual Report, City Planning Commission, 1968/1969).

Under the proposals, the Planning Commission would remain independent of the Executive Office. This independence would be strengthened by expansion of its power and functions in order to ensure that long-range planning considerations are stressed. The Commission, as now, would provide substantial direction on policy matters to the planning staff. As part of the intent to reduce the complexity of the Charter, the number and composition of members of the Planning Commission would be determined by ordinance. There would be no ex-officio members (presently two of the seven are ex-officio); members would be appointed by the Mayor to serve fixed terms and would be removable for cause only by the Board of Supervisors.

One of the important features of the proposed revisions is a new role for the Office of Planning as a coordinating authority for the Executive Office. Planning and budgeting would be closely linked by giving the Planning Director and the new Finance Director joint responsibility for setting priorities among operating programs and capital improvement projects. Another link to the Executive Office would be

created by eliminating the independence of the planning staff. The Planning Director would be given the responsibility to advise the Mayor and the Chief Administrative Officer. This responsibility is interpreted by the City Planning Department as extending to the coordination, supervision, and assistance of all city offices, agencies, and departments with respect to planning matters.

The outstanding weakness of the proposed new Charter is in the area of citizen participation. Although a stated objective of the Citizens' Committee, the only means proposed is apparently the encouragement and recognition of organized groups of citizens which would be expected to bring pressure on the Board of Supervisors. In spite of a call for citizen participation in the city affairs, the means of such participation in planning matters is not expressed. Numerous suggestions are possible, from neighborhood planning boards to places on the commission for the citizenry at large. If this is properly a matter to be determined by ordinance, the Citizens' Committee should make strong recommendations in order to support and complement its Charter revisions.

#### Regional Planning

In the long run, it will be necessary for the City of San Francisco and the surrounding communities to jointly plan and share the burden of executing programs for their residents. As emphasized earlier, the city is an extremely complex web of demographic, economic, social, and physical factors. Many problems are in reality localized symptoms of a larger problem or of another problem altogether. These urban problems cannot be isolated according to community jurisdictions. For example, transportation is clearly recognized as a public need whose provision requires an area-wide plan, whether highway or mass transit systems are constructed. Less obvious is the regional character of housing supply and housing demand.

Progress toward regional cooperation has been very slow. The Association of Bay Area Governments (ABAG), is a voluntary coalition in which movement is detectable only on the less controversial matters which can attract near unanimity. A number of special districts have been created to deal with air pollution, rapid transit, and the like. Most have very specific functions and are hampered by restrictions on their activity. For example, the Bay Area Air Pollution Control District (BAAPCD), is prevented by legislation from placing any constraints on automobiles as part of its pollution control program. This in spite of the fact that automobile emissions are the principal source of air pollution in the Bay Area. The Bay Area Rapid Transit District (BARTD) is charged with overseeing the construction and then operating a mass transit system. BART is a service organization; what is needed is an organization in which the planning of transportation systems is conducted or at least coordinated, so that a realistic balance is struck among various modes of transportation.

The special districts and ABAG form the foundation on which greater regional cooperation can be built, but progress will be slow, and perhaps only in response to incipient crises. The heart of the problem of generating and maintaining movement toward regional action is the issue of local autonomy. Communities jealously guard their right to veto decisions affecting themselves, but made by a group in which they have at best a small representation. It will be necessary for these communities to realize that the resolution of their problems will never be satisfactorily resolved until there is a commitment to cooperative planning. From the planner's point of view, the proper unit of planning is the whole Bay Area metropolis. Relations between population and environment, workers and jobs, destinations and transportation facilities, and public services and public revenues

can only be brought into balance by effective Bay Area-wide planning and government.

A principal goal of planning within the City of San Francisco should be the creation of a Bay Area government. Specific plans in such sectors as transportation, housing, economic development, and pollution control should take into account the probable future role of other communities. The City should devise a strategy to achieve the creation of a governmental authority over certain critical aspects of the Bay Area's activity and development.

#### Improvement Ideas

In the first three steps of the planning process, the objective is to obtain information from all possible sources in order to validly establish goals and to generate and evaluate alternative plans. The evaluation process is intended to judge the effectiveness of the various proposals in achieving the stated objectives and to anticipate possible "side-effects." The fourth step of the planning process is to choose from among alternative courses of action evaluated in the preceeding steps. Because a decision on the objectives may be made either when the objectives are first considered or when the alternatives are compared, some interesting variations on the "planning process" are possible. If the latter course of action is followed, the decision should be made by an elected political body or by the electorate at large. Observations about the suitability of the city structure for this type of decision are made elsewhere in this report.

On the other hand, if a resolution of conflicting objectives is attempted as the first step in planning, the planning process will be "politicized." By deferring the decision, the planning which precedes the decision is concentrated on developing information about alternative plans. If the decision is made as a part of the planning, then all

constituencies must be represented in the planning ranks. This, of course, conflicts with the purpose of the elected city officials. Undoubtedly, the best arrangement lies between these two extremes. The proposals which follow are various ways to restructure planning in San Francisco. They need yet to be carefully evaluated relative to one another.

1. Expand the Planning Commission, and by appointment or by election, make it representative of the various constituencies in the City. This proposal comes close to putting the Planning Commission in direct competition with the Board of Supervisors. However, contemporary thinking is that a planning commission should have independence relative to other city organizations. At the same time, there should be close cooperation and coordination with city departments for effectiveness. Any move to give the Planning Commission greater independence (e.g., the proposed Charter amendments) should be accompanied by ordinances explicitly ensuring representative membership. Recall that the Commission is charged with giving policy direction to the city planning staff.
2. Require that the City Planning Department establish and maintain closer contacts with the city residents and other constituencies. The residents of a particular area are least likely to have a coherent voice until they feel directly threatened and then they may be too late to be effective. Other constituencies, such as business organizations, are more farsighted and liaison personnel will appear. Because of the difference in attention span (at least until very recently), the public hearing is an inadequate device for interacting with the public at large. If for no other reason than insuring the smooth development and implementation of plans, the city planners must approach the potentially concerned parties, not wait for them to complain.

In the important case of the residents, the Planning Department might assign a certain neighborhood to a member of the staff. He would be responsible for being aware of the needs of that area. Alternatively, a local resident can be trained and placed in a local office to provide two-way communication with the neighborhood. This latter course implies that the individual would function as an advocate for the community. For this role, he must be a person who can honestly and realistically represent

the needs of the community in employment, education, transportation, housing, and so on. The difference in these two alternatives is the difference between communication and advocacy, and the latter is clearly more important, although the former is necessary.

The community advocate alternative has the advantage of forcing a relatively small amount of institutional restructuring. The advocate would be desirable over direct participation when time is an important factor in generating plans, and when the degree of technical sophistication is great. The major problem with such a system is that the individual will be identified within the community as an extension of the external agency. This may impede communication with people in the community and will make him a certain scapegoat for ill feelings should unpopular decisions be made.

3. Decentralize the planning function by creating community planning units. Clearly a certain degree of coordination is required if city-wide revenue is to be redistributed among the communities. In this situation each community would have its own administrator who would be responsible for the planning, implementation, and operation of all programs which could be separately administered in each community. Separate budgets would be prepared and submitted to the City for all such services and projects. Each community office would conduct its own surveys of citizens and set its own priorities.

This alternative places the responsibility for planning directly with the people in the community. They must identify the problem, generate a program and be prepared to implement it. This does not preclude outside assistance in the development of a well-researched and realistic proposal and a strategy for financing it. This alternative is only realistic with significant changes in external agencies. Funding has to be highly flexible to be able to respond to community initiated ideas. Furthermore, community control of the program implies a minimum of "strings" attached to funds which must, invariably, come from outside the community.

A critical factor to the success of this alternative is that the community be an effective agent in administering its programs. This means a degree of internal coordination must exist which is rarely found at present. The community must be able to pull its factions together and accurately assess its needs independent of where it thinks the money is. The tendency for one small group to take command may not be

insurmountable given sufficient inputs from outside the community and criteria for funding that emphasize broad community participation in the planning rather than the results of the planning alone.

The strength of this alternative is that it presents the greatest possibility that a broad sampling of people within the community will be involved in the process and feel responsible for its results.

In lieu of such a radical change, the City could establish small planning districts in which conditions and problems are studied with the active assistance of district citizens, institutions, and officials. The appraisal and any preliminary proposals should then be discussed in small groups at public meetings held in each subarea of each district not at massive public hearings. Any proposed plan would reflect citizen reaction and would be transmitted to public officials with a record of the citizen comments.

4. Actively encourage advocacy planning. There are a number of organizations in the City which have been created to point the way the City should move in its planning. These private groups generally advocate the point of view of a particular segment of the population. One of the common features of the disagreements between the official and the private planners is that basic data are often disputed. One way in which these advocacy groups can be actively encouraged is for the City to cooperate in developing valid and reliable data and information. There is room for substantial improvement in the quantity and quality of information on which decisions are based. This type of cooperation does not preclude different interpretation of that data or advocacy of a particular set of objectives for the City.
5. Create an independent organization whose function is to explore objectives for the City and ways to achieve them. It would be charged with soliciting or generating objectives and alternatives from all segments of society. Its aim would be to provide complete and informed evaluation of possible courses of action to the electorate and to the elected officials to facilitate decision-making. The objective here is to create an essentially neutral analytical body whose function is to study and present all sides of an issue.

If such a body existed, the analysis function of the City Planning Department could be minimized, and the Department could concentrate on the coordi-

nation and control of programs chosen by the government, i.e., the implementation. A variation on this is to invest powers of implementation in the independent organization. It would be given the responsibility of bringing the correct resources to bear on the alternative selected by some governmental process.

6. Establish the Planning Commission and its staff as an independent power in the government. It would in fact operate as another branch of government with status essentially equivalent to the present three. The purpose of doing this would be to establish planning (especially in the long view) as a government function of major importance. Although such a reorganization would be revolutionary, there are good reasons to consider it. A city simply will not be improved or maintained by an approach which treats the problems piecemeal. A strong planning branch would have the power to prepare and defend a coherent plan subject to few "exceptions." It would represent, symbolize, and articulate the "public interest" of tomorrow's public, a role which elected officials find difficult to do when faced with periodic elections demanding attention to the immediate public interest. The advice and consent of the commission would be required for all actions which have especially strong implications for the future.

The last two planning steps involve the coordination and control of plans among public agencies and the measurement of the effectiveness of various programs relative to their objectives. The first is badly needed in San Francisco. As noted earlier, the proposed charter revisions realign the duties and responsibilities of the planning staff so as to bring improvement. However, the potential is there for different interpretations of the degree of coordination and control by the Mayor, the Planning Director, the Finance Director, and their staffs. Ambiguities should be eliminated, the planning and coordinating functions pinpointed and strengthened, and incentives established for interdepartmental and interagency cooperation.

Finally, we have the problem of the evaluation of the effectiveness of city actions. In many cases, programs are evaluated with little thought given to the criteria employed,

which may turn out to be input or descriptive parameters rather than a valid measure of effectiveness based on the output or the results of the program. Finding an appropriate measure is not easy, but it must be recognized as a necessary first step. In the absence of a valid measure, great caution must be exercised in the assessment of effectiveness. It is also important that evaluation be considered a link in a continuous process of program development. Specifically, the results of evaluation must be fed back as part of a review of the objectives and the means to achieve them. Corrective actions should be taken, if necessary. The current research into "social indicators" may yield useful findings.

## C. ECONOMIC ASPECTS

### 1. Proposals and Recommendations

The true potential tax base of San Francisco is the total income and wealth of all individuals who live in, work in, visit, or do business in San Francisco. This is true whether this income is raised through property taxes or any other kind of tax. This may seem an unusually broad view of the City tax base, but all of these individuals are already being taxed directly or indirectly by the City. The important questions are what is the fair share of each group and how can each group be taxed most efficiently.

City residents now pay directly or indirectly about one-half of City taxes or about \$150 million. Their income could grow between 3% and 6% per year depending on how quickly individuals can be trained for higher paying jobs. Income will grow at least 3%, a level representing the long run increase in productivity. We believe that raising the effective rate on income, whether paid through property taxes or directly through income is likely to drive high income people out of the City.

Owners of businesses in the City pay about 2/5 or \$120 million, primarily through the property tax. Business taxes are limited by the earnings of these businesses, which the Bank of America projects to grow between 5% and 8% per year. Higher taxes on this group may simply drive away business.

The remainder of City taxes -- about \$30 million -- are paid by visitors and commuters through the sales tax, hotel taxes, and some user fees. These groups account for a significant proportion of City police, recreation and transportation expenditures and they pay only a small proportion of City taxes. In addition, the size of streets and highways is determined by the peak-load users, who are non-residents. This results in a reduction in revenue because the large amount of land which must be devoted to this use is non-taxable.

We recommend that we not exceed a certain limit on the taxation of residents, businesses, and individuals. We believe that higher rates will have a destructive effect on the economy. We can significantly increase the effective tax rate on visitors and commuters, but even this tax base is not limitless. Below are our recommendations on the limits for businesses and residents, along with potential ways of raising revenue within these limits.

Table III-2  
THE LIMITS

	<u>1969</u>	<u>1975</u>	<u>1980</u>	<u>1990</u>
Residents	\$150	\$220	\$285	\$500
Business	<u>120</u>	<u>190</u>	<u>280</u>	<u>600</u>
Total	\$270	\$410	\$565	\$1100

(millions of 1970 dollars)

Table III-3  
POTENTIAL REVENUE SOURCES

		<u>1969</u>	<u>1975</u>			<u>1980</u>			<u>1990</u>		
			<u>Lo</u>	<u>Med</u>	<u>Hi</u>	<u>Lo</u>	<u>Med</u>	<u>Hi</u>	<u>Lo</u>	<u>Med</u>	<u>Hi</u>
Property	211	260	300	385	260	350	482	260	480	808	
Income	---	39	57	115	63	81	163	125	160	320	
User Fees	20	39	50	77	43	63	125	57	106	225	
Sales	23	27	40	54	31	46	62	52	78	104	
Cap. Gains	---	5	10	15	7	15	22	10	25	40	
Gambling	---	2	10	15	3	15	20	5	20	30	
Value Added	5	12	25	50	15	30	60	20	40	80	
State	90	110	115	140	120	135	175	150	190	250	
Federal	60	72	87	102	90	110	135	135	175	205	

(millions of 1970 dollars)

### Advantages and Disadvantages of Sources

As shown earlier, the property tax is the City's major source of funds. It is simple and cheap to administer. Its major disadvantages lie in its impact and its inability to keep up with growth of economic activity. The impact of the tax is detrimental to the well-being of the general populace of the City. First the tax is regressive with regard to individuals and families, since property is a larger percent of the wealth of lower income families. Second, the tax has an impact on the location of industry. The third factor is the impact of property taxes on new construction and rehabilitation. Since the tax is one on both land and its improvements, it contributes to the shortage of standard housing and the deterioration of urban areas. An upward reassessment on the improvements reduces the profitability for an absentee landlord. The result is an incentive for an individual to hold land for speculative purposes.

This disadvantage could be largely corrected by instituting a tax primarily on land. (Fire protection should be paid for by a tax on improvements, but that would be minor.) The land only tax would tend to keep pace with inflation increases, since the value of urban land increases faster than the average rate of inflation. Rates would simply be changed so that a land only tax would produce the same revenue as the old property tax. The important point is the fact that taxes would not rise as property is improved. Taxes would be so high on vacant or underutilized land, that the owner would be forced to improve the property to gain revenue. A strict use of zoning will be necessary in order to prevent excessive use of high rise structures and to maintain the presence of open space land.

### Income Tax

This tax is not presently used. It could cover only payrolls of resident workers or it could be extended to cover all income of residents and all earnings of non-resident

workers in the City. Twenty large cities (and 50 smaller ones) in the country do use this method of raising revenue. It can vary from a flat rate as used in some cities, to a complicated system with graduated rates and exemptions, as New York City uses.

Economists generally consider it to be the fairest tax (because income is a better indicator of ability to pay) and it would shift a substantial proportion of the tax burden to commuters. This should have little effect on business locations except for very scarce skills. In a competitive labor market, only labor with scarce skills can pass the costs of the income tax back to their employer. The use of a 2% rate would be well below the rate of several other cities.

#### User Fees

As a general principle user fees are the ideal revenue source when a user can be specifically identified. Services should be free only where there is an over-riding social or economic reason. Since all prices have incentive or disincentive effects, user charges can be used to affect behavior. In addition to making the user pay for services, these prices can be set in a way which will promote other goals. For example, the use of garage taxes and higher tolls can be used to encourage commuters to switch to mass transit, cutting down on congestion and pollution. Other types of user fees include a hotel tax, additional gasoline tax, and city automobile registration.

#### Sales Tax

The present City sales tax could be raised from 1½ to 2%. This would tax visitors and commuters along with residents. Too high a rate, however, would cut into retail trade. New York City has a higher city sales tax and it appears that retail trade has not decreased because of it.

### Capital Gains on Land Sales

This tax would capture part of the capital gains from the sale of land which would be above a normal inflation rate. It would discourage land speculation and allow the City of San Francisco to share in the benefits of rezoning. Its maximum rate would be about 20%. This is not a large tax source, but it has an important positive effect on land use patterns when combined with a "land only" property tax.

### Gambling

The Community Services group has already discussed repealing laws that try to legislate private morality. It is thought that this would hurt organized crime, decrease the potential for police corruption, and increase the respect for the law. In addition, it provides a source for revenue. New York City has legalized a lottery and off-track betting. While the revenue is not large, we think this is a good idea.

### Value Added Tax

This tax on business will encourage manufacturing relative to service industries. It would be a tax on the value added to the original product by the activity of the firm. It is the easiest to administer equivalent of a corporate income tax on the local level. It is used successfully in Michigan. We estimate a maximum rate of 1%, but this could be higher.

### Recommended Strategy

The course has decided on the goal of improving the quality of life for City residents. We propose a tax strategy that will serve this goal by encouraging construction and rehabilitation, discourage auto commuting, and improve the City's economic health. This strategy emphasizes revenue sources that will keep pace with inflation and make commuters pay their fair share.

1. A land only property tax to encourage new construction and rehabilitation. Population density will have to be controlled through zoning if a real boom is set off. We expect a 3% annual increase in revenues with no increase in rates because of the

increase in land value from economic activity.

2. An income tax on all income of residents and all earnings in the City by non-residents. This can be administered simply as a percent of state income taxes for residents and a straight percent of earnings for non-residents. The rate would be 2%.
3. A major push on user charges, including a one cent gas tax, higher bridge tolls, including tolls on 280 and Bayshore exits if possible, fees for museums and the zoo, garage taxes, etc.
4. A value added tax at 1%.
5. A 20% tax on land capital gains at time of sale.
6. Legalized lottery, off track betting, and other gambling to be heavily taxed.
7. To increase resident earnings, and retrain workers for the shift from manufacturing to services, we support efforts to expand vocational training. This can be financed by an additional tax on future earnings in the form of a contingent repayment loan.

Table III-4

REVENUE FROM RECOMMENDED STRATEGY

	<u>1975</u>	<u>1980</u>	<u>1990</u>
Property	\$ 300	\$ 350	\$ 480
Income	115	163	320
User Fees	50	65	106
Sales	40	46	78
Cap. Gains	10	15	25
Gambling	15	20	30
Business	25	30	40
State	110	120	150
Federal	87	110	175
Total	<u>\$752</u>	<u>\$919</u>	<u>\$1404</u>

(million of 1970 dollars)

### Qualifications

We realize that the above figures and recommendations represent the ideal situation. We must take account of obstacles that will prevent the City from reaching our revenue projections.

1. The proposal for a land only tax is considered reasonable for implementation, but it will take an estimated five to ten years before it is accepted. The main opposition is expected to be from homeowners who will resent paying the same tax as a multi-unit high rise building built on the same area of land. This qualification should have only minor effects on revenue.
2. The income tax proposal is considered highly probable for initiation within the next two years at the 1% level. Given a continuance of the present trend of the economy, a 2% tax should be politically possible in approximately ten years. These qualifications will affect revenue projections for the first ten year period. In addition, the cost of administering the tax could be up to 15% of revenues if it were locally administered as opposed to 1-6% if the city were able to ride the state tax administration.
3. Many of our proposed user fees are considered politically infeasible due to an extremely strong downtown lobby, the segment of the City most heavily affected by these tax proposals.
4. An increase in sales taxes for a local area must be approved by the state government. Historically, approval has been only for specific reasons and only over a short term specified length of time, as in the case of the  $\frac{1}{2}\%$  increase for BART. This pattern could possibly be broken if Los Angeles and San Francisco could agree on the need for such an increase for the solvency of large cities. This possibility seems remote at present, due to the rivalry between the two cities. Also, the present state administration has reacted unfavorably to similar proposals. This would lower our projected revenues from this source.
5. The capital gains tax would be opposed by strong lobbies of land speculators and realtors. However, it is felt that a comprehensive plan and a proper amount of publicity would make the institution of this tax a strong possibility. We did not decrease

our estimates of revenue from this source.

6. Both gambling and the City lottery are considered infeasible. Gambling is against the California State Constitution. Amendment to the constitution is thought to be nearly impossible due to opposition from other parts of the state. It is not clear, whether a City lottery would be considered illegal under the law against gambling, but it would require a coalition between San Francisco and Los Angeles to pass the needed legislation.
7. The value added tax on business is considered to be infeasible at this time, due to the many powerful lobbies that would oppose it. Due to the feeling that some business tax of this type will be considered in the future, the revenue from the business source was not eliminated.

Table III-5  
MODIFICATIONS IN REVENUE PROJECTIONS

	<u>1975</u>	<u>1980</u>	<u>1990</u>
Income	43	58	272
User Fees	39	43	57
Sales	<u>27</u>	<u>31</u>	<u>52</u>
Total Revenue	641	850	1251

(million of 1970 dollars)

Uses of Funds

Once we modified our revenue projections, we made a first estimate of the capacity of these sources to fund the projects proposed by various groups. In our projection of expenditures we assumed that present services would increase at a rate of 4% annually. (See Table III-6.) The difference between the revenues and the expenditures on present services is the surplus we considered available for new projects and programs. The next step was to outline the new programs that were costed out for us.

Table III-6  
BUDGET ESTIMATES\*

	1 Optimum Revenue Projec- tions	2 Present Services Projec- ted	3 Modified Revenue Projec- tions	4 Difference (1-2)	5 Difference (3-2)
1970	460	450	400	10	-50
1971	520	468	451	52	-11
1972	580	486	495	94	9
1973	640	505	554	135	49
1974	700	525	598	175	73
1975	752	545	641	207	96
1976	790	566	670	224	104
1977	820	588	690	232	102
1978	860	611	710	249	99
1979	895	635	744	260	109
1980	919	660	850	259	190
1981	970	686	887	284	201
1982	1020	713	925	307	212
1983	1070	741	971	329	230
1984	1120	780	1014	340	234
1985	1160	810	1046	350	236
1986	1210	840	1089	370	249
1987	1260	872	1131	388	259
1988	1310	905	1174	405	269
1989	1360	940	1216	420	276
1990	1404	986	1251	418	265

\*All figures in million of 1970 dollars

### Transportation

All of the transportation proposals assumed that projects could pay for operating and maintenance expenses through revenue from user fees (or else had negligible expenses). The only funds needed from the City budget were for capital expenditures. The major cost were (million of dollars):

Geary St. Underground	\$200
Embarcadero Underground	300
Marin/SF Rapid Transit	200*
BART to Airport	120
BART to San Jose	250*
Miscellaneous	40
	<u>\$830</u>

\*San Francisco's share of the cost of these projects. We assumed that the cash flows for these projects would be uniformly distributed over a 5 year period, at about \$160 million a year.

### Community Services

The costs for community services were small. The fire departments programs were considered small in terms of the significance of our figures and were ignored here. The major costs were an increase in the social service department budget (\$5 million from 1975-80 and \$11 million from 1980-90) and training programs at a cost of \$3.5 million per year.

### Housing

The only significant housing cost presented for funds over the 20 year period the subsidy to the public housing corporation which is responsible for rehabilitation and renewal. With the rehabilitation cost of \$1 billion given by the Housing Systems group, we estimated \$200 million or 1/5 would be the City's contribution over the 20 year period.

### Balancing the Budget

It was obvious that the large capital costs involved in some of the programs required some form of bonding. Since

bonds must be repaid, the City must possess the capacity to float the bonds. We investigated San Francisco's ability to pay for the bonding of the capital items for which we had estimates. With the assumptions we used, the City has the capacity to fund all projects presented if it achieves the high or low revenue projections we used. With the low estimates, the City has only a small surplus in the last three years, which could easily be negated due to the inaccuracy involved in the long run estimates. (See Fig. III-3.)

If we accept these estimates, we still can not be assured of success. Our assumptions as to the City's ability to float bonds for these programs abstracted from reality. As can be seen from Tables III-7 and 8, the maximum deficit (years 5, 11) far exceeds the present debt limit of San Francisco. In addition we assumed that the City would be paying an interest rate of 8%. This is also above the legal limit. This raises the issue of the municipal bond market. We recommend that the debt limit be raised or eliminated in view of what we foresee as the City's ability to meet its obligations. The debt ceiling is tied to the assessed valuation of taxable property. In our strategy the City is reducing its reliance on the property tax, making the assessed value of property a less valid indicator of ability to service debt. If the debt limit were not the restraint, however, other problems would remain. Municipalities are able to float bonds at relatively low interest rates because of the fact that the interest is free from federal (and in some cases, state) taxation. As a city floats larger and larger bond issues it must find a wider market, which means individuals in lower tax brackets. This usually means raising the interest rate to make the effective rate to people in lower tax brackets (interest plus tax saving) equal to the comparable bond which is non-tax exempt. In addition, as a city (or a firm) increases the size of its debt, investment in new bond issues

Figure III-3. BUDGET SURPLUS - NEW EXPENDITURES  
1970-1990

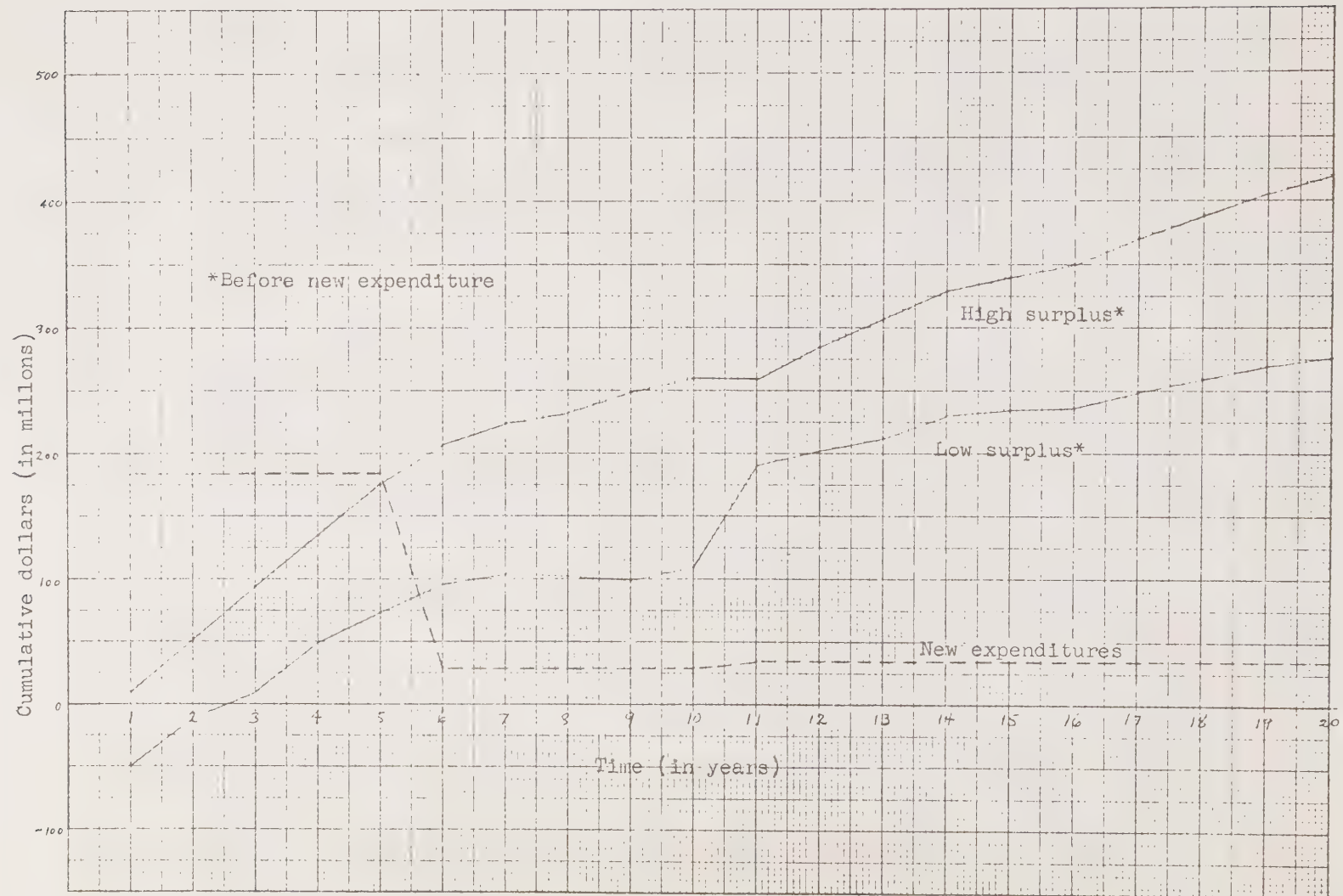


Table III-7  
FUNDING CAPACITY  
WITH OPTIMUM REVENUE (HIGH SURPLUS)  
(millions of 1970 dollars)

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
	Money In	Money Out	Diff						
1	A <sub>1</sub>	B	C <sub>1</sub> +A <sub>1</sub> -B	T <sub>1</sub> -C <sub>1</sub> +x <sub>1-1</sub>	f=1+Δ <sup>b</sup>	X <sub>1</sub> =T <sub>1</sub> x f <sup>a</sup>	T <sub>1</sub> =C <sub>1</sub> + x <sub>1-1</sub>	f=1+Δ <sup>b</sup>	X <sub>1</sub> =T <sub>1</sub> x f
1	10	183.5	-173.5	-173.5	1.08	-187.4	-173.5	1.08	-187.4
2	52	183.5	-131.5	-318.9	1.08	-344.4	-318.9	1.08	-344.4
3	94	183.5	- 89.5	-433.9	1.08	-468.6	-433.9	1.08	-468.6
4	135	183.5	- 48.5	-517.1	1.08	-558.5	-517.1	1.08	-558.5
5	175	183.5	- 8.5	-367.0	1.08	-612.4	-567.0	1.08	-612.4
6	207	28.5	178.5	-433.9	1.08	-468.6	-433.9	1.08	-468.6
7	224	28.5	195.5	-273.1	1.08	-294.9	-273.1	1.08	-294.9
8	232	28.5	203.5	- 91.4	1.08	- 98.7	- 91.4	1.08	- 98.7
9	249	28.5	220.5	121.8	1.04	126.7	121.8	1.06	129.1
10	260	28.5	231.5	358.2	1.04	372.5	360.6	1.06	382.2
11	259	34.5	224.5	597.0	1.04	620.9	606.7	1.06	643.1
12	284	34.5	249.5	870.4	1.04	905.2	892.6	1.06	946.2
13	307	34.5	272.5	1177.7	1.04	1224.8	1218.7	1.06	1291.8
14	329	34.5	294.5	1519.3	1.04	1580.1	1586.3	1.06	1681.5
15	340	34.5	305.5	1885.6	1.04	1969.0	1987.0	1.06	2106.2
16	350	34.5	315.5	2276.5	1.04	2367.6	2421.7	1.06	2567.0
17	370	34.5	335.5	2703.1	1.04	2811.2	2902.5	1.06	3076.7
18	388	34.5	353.5	3164.7	1.04	3291.3	3430.2	1.06	3636.0
19	405	34.5	370.5	3661.8	1.04	3808.3	4006.5	1.06	4246.9
20	420	34.5	385.5	4193.8	1.04	4361.6	4632.4	1.06	4910.3

$$a_{xi} = (c_i + x_{i-1}) \times (1 + \Delta), x_0 = 0$$

<sup>b</sup>Note: If  $(c_i + x_{i-1}) = 0$       = 0.04, or 0.06  
           If  $(c_i + x_{i-1}) = 0$       = 0.08

Table III-8  
FUNDING CAPACITY  
WITH MODIFIED REVENUE (LOW SURPLUS)  
(millions of 1970 dollars)

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
	Money In	Money Out	Diff						
1	A <sub>2</sub>	B	C <sub>1</sub> =A <sub>2</sub> -B	t <sub>1</sub> = c <sub>1</sub> f=1+Δ <sup>b</sup> + x <sub>1-1</sub>	x <sub>1</sub> = t <sub>1</sub> x f <sup>a</sup>		t <sub>1</sub> = c <sub>1</sub> f=1+Δ <sup>b</sup> + x <sub>1-1</sub>	x <sub>1</sub> = t <sub>1</sub> x f	
1	-50	183.5	-233.5	-233.5	1.08	-252.2	-233.5	1.08	-252.3
2	-11	183.5	-194.5	-446.7	1.08	-482.4	-446.7	1.08	-482.4
3	+ 7	183.5	-174.5	-656.7	1.08	-709.5	-656.9	1.08	-709.5
4	49	183.5	-134.5	-844.0	1.08	-911.5	-844.0	1.08	-911.5
5	73	183.5	-110.5	-1022.0	1.08	-1103.8	-1022.0	1.08	-1103.8
6	96	28.5	67.5	-1036.3	1.08	-1119.2	-1036.3	1.08	-1119.2
7	104	28.5	75.5	-1043.7	1.08	-1127.2	-1043.7	1.08	-1127.2
8	102	28.5	73.5	-1053.7	1.08	-1138.0	-1053.7	1.08	-1138.0
9	99	28.5	70.5	-1067.5	1.08	-1152.9	-1067.5	1.08	-1152.9
10	109	28.5	80.5	-1072.8	1.08	-1158.2	-1072.4	1.08	-1158.2
11	190	34.5	155.5	-1002.7	1.08	-1082.9	-1002.7	1.08	-1082.9
12	201	34.5	166.5	-916.4	1.08	-989.7	-916.4	1.08	-989.7
13	212	34.5	177.5	-812.2	1.08	-877.2	-812.2	1.08	-877.2
14	230	34.5	195.5	-681.7	1.08	-736.2	-681.7	1.08	-736.2
15	234	34.5	199.5	-536.7	1.08	-579.6	-536.7	1.08	-579.6
16	236	34.5	201.5	-378.1	1.08	-408.3	-378.1	1.08	-408.3
17	249	34.5	214.5	-193.8	1.08	-209.3	-193.8	1.08	-209.3
18	259	34.5	224.5	15.2	1.04	15.8	15.2	1.06	16.1
19	269	34.5	234.5	250.3	1.04	260.3	250.6	1.06	265.6
20	276	34.5	241.5	501.8	1.04	521.9	507.1	1.06	537.5

$$a_{xi} = (c_i + x_{i-1}) \quad 0, \quad = 0.04, \text{ or } 0.06$$

$$^b \text{Note: If } (c_i + x_{i-1}) \quad 0, \quad = 0.04, \text{ or } 0.06$$

$$\text{If } (c_i + x_{i-1}) \quad 0 \quad = 0.08$$

## Explanation of Tables III-7 and 8

- Column 1. Money in - the difference between projections of possible revenue and projections of present level of expenditures.
- Column 2. Money out - the incremental funds required for new projects.
- Column 3.  $C_i$   $A_i$   $B_i$  - the partial surplus or deficit for the year when new projects are included. It is assumed that: (a) a deficit is financed by a loan (bonds or another financial instrument) which has an annual cost of 8%, (b) a surplus can be invested in one of two alternative ways. Either bonds are recalled at a penalty or an investment is made by the government.
- Column 4.  $t_i = C_i + X_{i-1}$  - cumulative deficit or surplus. Must be zero or greater at time 20 in order to finance all projects.
- Column 5.  $f = 1 +$  - interest rate charged. 8% if deficit, 4% if surplus.
- Column 6.  $X_i = t_i \times f$  - interest is charged on cumulative surplus or deficit.
- Columns 7, 8, 9 - columns 4, 5, 6 recalculated with a 6% rate on surplus.

Notes: In Tab. III-7, (High Surplus) there will be a deficit until year 9, with the maximum debt outstanding in year 5.

In Table III-8, (Low Surplus) there will be a deficit most of the period (until year 17) and the maximum will be in year 10.

appear more risky to the individual. This also means a higher interest rate to attract buyers. The entire issue questions the ability of the municipal bond market to ever regain its viability.

The only solution in the opinion of many is a new type of structure which is a joint venture of the federal government, state and local governments, and private institutions. The Urban Development Bank (Urbank) would be such a structure. It would lend to state and local governments at low rates for capital expenditures. It would raise money by issuing a new type of bond that was taxable and guaranteed by the federal government. The federal government, however, would not be a stockholder in the bank. It would only guarantee the bonds and provide an annual subsidy that would pay the interest differential between the rate at which Urbank borrows and the lower rate at which it lends to governments.

#### Realism

Aside from the problem of the bond market (although it is not a small one) the picture looks good -- to good. From all that we know about public finance, the budget is always tight and good proposals are often left unfunded. There is no reason to believe that things will be different in the future. It is highly probable that even our low projections on revenue are still too high. The inability to institute new forms of taxes still included in our figures such as land capital gains and a new or expanded business tax, could be enough to turn our slim surplus into a deficit. This overestimate could be partially offset by an underestimate of state and federal assistance. In particular, if legislation similar to state Proposition 8<sup>1</sup> were to pass sometime in the

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<sup>1</sup>Constitutional amendment to force the state to pay 90% of local welfare costs and 50% of school costs with the revenue raised by means other than the property tax.

future, present program expenditures funded by the City would decrease. Other errors and unforeseen changes in future conditions could adversely affect revenue.

Likewise, there are probably errors in the cost estimation. Present services may increase in cost at a rate higher than the average figure of 4% used. The cost estimation for new programs and projects appear to some observers to be on the low side. Also, the projected income from the operation of the transportation proposals may not cover operating costs as predicted. (For example, the downtown trams may not be able to cover costs by using vehicles as delivery vans for business.) In addition, we are certain that there are other new programs recommended for adoption which have not been costed out for consideration in the City budget. All of these factors increase the demands on the revenue projections. These projections do not have enough slack for a large increase in expenditures.

#### Alternative Sources

It is possible for projects to receive funding from the federal government directly by applying for a specific type of grant (Model Cities, Urban Mass Transit Demonstration Project, etc.) which does not come through the City budget. The funds are quite limited and San Francisco would be competing with other large cities for available funds. The recently formed coalition of urban mayors may be a successful lobby to force an increase in the amount of funds available, but funds will still fall short of demands.

Another source would be special districts in existence in the Bay Area. BART and the Golden Gate Bridge and Highway District can tax and issue bonds, spreading the cost over all member counties. (Three counties in BART and six in Golden Gate.) It is one way of getting around the City debt limit, but part of the burden must still be repaid by the taxpayers of San Francisco. For projects which expand

BART operation, they will not be undertaken unless the counties involved (San Mateo and Santa Clara) join the district and share the costs. This would help spread the burden of the cost of the projects. The Marin-San Francisco Rapid Transit line might receive partial funding from the Golden Gate District.

## 2. The Non Profit Conglomerate

As a means of improving living conditions, elevating the economic status of the citizens, and building a stronger sense of community, we propose the formation of the "nonprofit conglomerate" formed by a small number of private individuals to provide a wide number of services to the local community.

For many years nonprofit foundations have been using their resources for socially beneficially purposes. Based in part on the experiences of these foundations, nonprofit corporations have been formed in recent years for the purpose of furthering specific social causes, such as the construction of housing. Taking this a step further, our nonprofit conglomerates will act as an umbrella for profit corporations in offering a wide number of services and opportunities to members of the neighboring community, including job training, and health services, etc.

Incorporation as a nonprofit group will enable these conglomerates to raise money from private sources and also have the opportunity to tap government resources if desired. Private sources of funding - banks, and other financial institutions, corporations, and owners of small and large local businesses, etc. - will be able to receive tax deductions for their contributions to these conglomerates, as well as benefiting from the overall contributions these conglomerates will make to the welfare of the community. Furthermore, nonprofit status will clearly enable these conglomerates to enjoy advantageous relationships in their dealings with the

government (tax breaks, qualified for special programs open only to non-profit groups, etc.). From the outset, it should be realized that the word "nonprofit does not necessarily have to connote "poor." Quite to the contrary, we propose that the salaries of the employees of these conglomerates be commensurate with what they would be receiving from a healthy, going business in that community.

How do we propose to make these salaries commensurate? In allocating the resources of the conglomerate, a higher percentage of the funds will be devoted to salaries than is customary for most nonprofit organizations. While this means that in the beginning the projects of these conglomerates will be somewhat smaller, the chances of success are greatly enhanced because top quality executives and employees are doing the work. Furthermore, each success, however small, will increase the likelihood of success of future projects, as well as expansion of the conglomerate on the "profits" of these initial ventures.

Having the conglomerates operating on the principle of acquiring top-quality executives through high salaries, these top black executives employed by the conglomerate will be much more likely to remain in the ghetto than previously. This being of direct and indirect benefit to the local community. Directly, the community will benefit from the high quality of the readily accessible services performed by these conglomerates at reasonable cost. Indirectly, the community will benefit by having these high quality individuals, both executive and nonexecutive, living in the community physically, as well as keeping the salaries they make in local circulation.

There are certain psychological benefits to be realized as a result of this nonprofit conglomerate scheme. First, the individuals involved in these conglomerates will be "free" to help the community on a full-time basis, without

personal concerns about money. (Formerly, the black who was interested in spending time helping his community had to do it either by doing it without pay - and thus he was not entirely free from outside concerns - or he did it by accepting a low-paying job, the disadvantages of which have already been cited.)

A second psychological advantage of this scheme is that it enables both young and old citizens in the local community to positively identify with the dynamic independence and success that both the individuals in the conglomerate and the conglomerate itself will constantly convey.

A final psychological advantage of the nonprofit conglomerate is that when an innovative program is initiated by the conglomerate, the local citizens will be more likely to cooperate without expressing suspicion as to motives. (If the innovations were being promoted by a group which was profit-oriented, the local citizens might be afraid that they were going to be "hustled" and thus be unwilling to cooperate.)

An additional feature of this program is that local conglomerates will be affiliated with graduate business schools in the local area whenever possible. Through such an affiliation, business school students and professors will be invited to participate in the conglomerate's effort. There will be several advantages from this arrangement: first, the conglomerates can benefit from this local expertise. Secondly, the advice provided will be inexpensive, of not entirely without cost. Finally, these arrangements will help perpetuate and expand the nonprofit conglomerate program as a whole; young men participating in these efforts while enrolled in business schools may well decide to work in this area full-time upon graduation. (Because salaries will be competitive with high paying positions elsewhere, this is a very realistic possibility.)

What are the possible constraints of a proposal such as this? Lack of initial capitilization is obviously the first and potentially the most overwhelming. Because of the non-profit status of the conglomerates, however, we are confident that tax-deductible funds will be readily obtained if enough effort is exerted. And once the original funds are gathered, the conglomerate will be able to expand its funds for future ventures if the original ones are successful. Also local businesses, being profitably employed by the conglomerate might see it feasible to make donations to this umbrella corporation.

A second possible constraint is lack of talent. Because of the high salaries which will be offered, however, and because of the affiliations with business schools, as mentioned previously, it should not prove to be too difficult to attract the necessary skills.

Finally, there are a number of specific potential constraints which deal with some specific area of concern, such as factors in how a conglomerate can provide health care, but specific issues such as these are beyond the scope of this preliminary proposal. We are confident, however, that solutions can be found to most of these subordinate problems as they arise.

The final phase of the nonprofit conglomerate proposal to be discussed here is that of promotion. To make this program a reality, we will use several means: First, standard channels of public relations will be used. Secondly, through a financial grant, if possible, a group of promoter/consultants will be formed which will travel about the country with the purpose of encouraging the formation of these conglomerates, and to assist local groups in their initial efforts. Finally, also through a grant, a revolving fund of "seed money" will be established. This seed money (or "front money" will be loaned to groups interested in forming local

conglomerates in other areas. When these local conglomerates obtain their own funding, they will then pay back these low-interest or interest-free loans.

#### Development Projects

A successful low-income housing department, the "Acorn" project in Oakland, is pictured in Fig. III-4. While Acorn cost \$12 per square foot to build about two years ago, its actual operating costs are obfuscated because of its subsidized operation by the Housing Authority of the City of Oakland. Since we are concerned with the total cost of housing (the cost which must be borne by the tenant, landlord, local and federal subsidy programs), this \$12 per sq. ft. construction cost is combined with the cost of financing and operating costs, (which includes property tax expense), to yield the Required Minimum Gross Rent (RMGR) in Tables III-9 thru III-15. Year "0" represents the year of construction.

For the purposes of illustration, we will consider one-third of the entire 500-unit, \$6 million "Acorn" project and call it the "Billigburg Project." The Billigburg Project, which is described in Table III-16 and pictured in Fig. III-4, is viewed in terms of actual costs (construction, financing, and land), at the time the project was built. Acorn was built by a Bay Area construction firm whose financial statements are not available. Thus, the hypothetical Clark Contractors, whose balance sheet and income statement appears in Tables III-17 and 18, is typical of a medium-size general contractor. The important cost percentages for materials, direct labor, etc., are those actually experienced by Acorn's builder. Clark's derived cost figures for Billigburg illustrates the amount of reduction in RMGR which may be accomplished by labor and/or materials-saving construction innovations.

Another hypothetical firm, Fernandez Properties, is illustrated in Tables III-19 through III-20. Tables III-10 through III-15 demonstrate that the cost of financing and



Figure III-4. THE BILLIGBURG PROJECT

Table III-9  
G & S MFG. CORP.  
INCOME AND NET CASH FLOW STATEMENT  
FOR YEAR 1 Jan 69 to 1 Jan 70

	<u>G&amp;S Mfg. Corp.</u>	<u>Subsidiary: Fernandez Properties</u>	<u>Combined Results</u>
Sales	\$10,000,000	\$ 377,000	\$10,377,000
Cost of Sales	5,000,000	299,965	5,299,965
Depreciation	<u>1,000,000</u>	<u>143,999</u>	<u>1,143,999</u>
Gross Income (loss)	4,000,000	(66,964)	3,933,036
Income Tax	<u>2,000,000</u>	<u>0</u>	<u>1,966,518</u>
Net Income	2,000,000	(66,964)	1,966,518
Less: mortgage principal p'mt		23,080	23,080
Plus: depreciation	<u>1,000,000</u>	<u>143,999</u>	<u>1,143,999</u>
Net cash flow	\$3,000,000	\$ 53,955	\$3,087,437
G&S Cash flow change, with Fernandez subsidiary		<u>87,437</u>	
Fernandez' enhanced cash value*		<u>33,482</u>	

\* Increased cash flow to G&S Mfg. Corp. above the cash flow available to Fernandez as an independent firm.

Table III-10

Fernandez Properties  
 Billigburg Operations  
 \*required rent \$394,000 (Ferman.)  
 \$377,000 (G&S sub)

\*Building cost \$2,000,000  
 \*Total proj. cost \$2,340,000  
 \*Mortgage \$2,106,000 @ 9.5%

Year	0	1	2	3	4	5	6
Purchase Cash Outlay	-234,000						
Sale Cash Proceeds							-70,153
Depreciation		143,999	132,480	121,882	112,131	103,160	94,908
Buildings Book Value	2,000,000	1,856,001	1,723,521	1,601,639	1,489,508	1,386,348	1,291,440
Mortgage Prin. Pmt.		23,080	25,273	27,674	30,303	33,182	36,335
Fair Market Val.	2,340,000	2,260,000	2,180,000	2,100,000	2,020,000	1,940,000	1,860,000
Assessed Value	585,000	565,000	545,000	525,000	505,000	485,000	465,000
Fair Mkt - (Land and Land-scape)	2,000,000	1,920,000	1,840,000	1,760,000	1,680,000	1,600,000	1,520,000
Sale Capital Gain							228,560
Rent (RMGR)		377,000	377,000	377,000	377,000	377,000	377,000
Less: Tax-Deductible Costs							
Property Tax		71,896	69,438	66,980	64,522	62,064	59,606
Depreciation		143,999	132,480	121,882	112,131	103,160	94,908
Maintenance, Repairs		13,000	13,000	13,000	13,000	13,000	13,000
Mgm't, staff overhead		9,000	9,000	9,000	9,000	9,000	9,000
Insurance		6,000	6,000	6,000	6,000	6,000	6,000
Mortgage Interest		200,069	197,877	195,476	192,846	189,968	186,815
Total Tax-Deductible		443,964	427,795	412,338	397,499	383,192	369,329
Gross Income (loss)		(66,964)	(50,795)	(35,338)	(20,499)	(6,192)	7,671
Income Tax		0	0	0	0	0	3,835
Net Income (loss)		(66,964)	(50,795)	(35,338)	(20,499)	(6,192)	3,835
Less: Mortgage Prin Pay		23,080	25,273	27,674	30,303	33,182	36,335
Plus: Depreciation		143,999	132,480	121,882	112,131	103,160	94,908
Less: Capital Gains Tax							52,574
Fernandez Cash Flow	-234,000	53,955	56,412	58,870	61,329	63,786	60,319
G&S Cash Flow	-234,000	87,437	81,810	77,039	71,578	66,882	60,319

Fernandez Properties  
 Billigburg Operations  
 \*required rent \$331,000 (G&S sub)

Table III-11

\*Building Cost \$2,000,000  
 \*Total proj. cost \$2,340,000  
 \*Mortgage \$2,106,000 @ 7%

Year	0	1	2	3	4	5	6
Purchase Cash Outlay	-234,000						
Sale Cash Proceeds							-7,812
Depreciation		143,999	132,480	121,882	112,131	103,160	94,908
Buildings Book Value	2,000,000	1,856,001	1,732,521	1,601,639	1,489,508	1,386,348	1,291,440
Mortgage Principal Payment		33,297	35,628	38,122	40,791	43,646	46,701
Fair Market Value	2,340,000	2,260,000	2,180,000	2,100,000	2,020,000	1,940,000	1,860,000
Assessed Value	585,000	565,000	545,000	525,000	505,000	485,000	465,000
Fair Market (Land and Landscape)							1,520,000
Sale Capital Gain							228,560
Rent (RMGR)	331,000	331,000	331,000	331,000	331,000	331,000	331,000
Less: Tax-Deductible Costs							
Property Tax		71,896	69,438	66,980	64,522	62,064	59,606
Depreciation		143,999	132,480	121,882	112,131	103,160	94,908
Maintenance, Repairs		13,000	13,000	13,000	13,000	13,000	13,000
Management, Staff							
Overhead		9,000	9,000	9,000	9,000	9,000	9,000
Insurance		6,000	6,000	6,000	6,000	6,000	6,000
Mortgage Interest		147,419	145,089	142,595	139,926	137,071	134,016
Total Tax-Deductible		391,314	375,007	359,457	344,579	330,295	316,530
Gross Income (loss)		(60,314)	(44,007)	(28,457)	(11,579)	705	14,470
Income Tax		0	0	0	0	353	7,235
Net Income (loss)		(60,314)	(44,007)	(28,457)	(11,579)	353	7,235
Less: Mortgage Prin. Pay		33,297	35,628	38,122	40,791	43,646	46,701
Plus: Depreciation		143,999	132,480	121,882	112,131	103,160	94,908
Less: Capital Gain Tax							52,574
Fernandez Cash Flow	-234,000	50,388	52,845	55,303	59,761	59,867	-4,944
G&S Cash Flow	-234,000	80,545	74,849	69,532	65,551	59,867	-4,944

Table III-12

Fernandez Properties  
 Billigburg Operations  
 \*required rent \$294,000 (G&S sub)

\*Building Cost \$2,000,000  
 \*Total proj. cost \$2,340,000  
 \*Mortgage \$2,106,000 @ 5%

Year	0	1	2	3	4	5	6
Purchase Cash Outlay	234,000						54,149
Sale Cash Proceeds							94,908
Depreciation		143,999	132,480	121,882	112,131	103,160	1,291,440
Buildings Book Value	2,000,000	1,865,001	1,732,521	1,601,639	1,489,508	1,386,348	56,319
Mortgage Prin. Pmt.		44,127	46,333	48,650	51,083	53,637	1,860,000
Fair Market Value	2,340,000	2,260,000	2,180,000	2,100,000	2,020,000	1,940,000	465,000
Assessed Value	585,000	565,000	545,000	525,000	505,000	485,000	
Fair Market - (Land and Landscape)							1,520,000
Sale Capital Gain							228,560
Rent (RMGR)	294,000	294,000	294,000	294,000	294,000	294,000	294,000
Less: Tax-Deductible Costs							59,606
Property Tax		71,896	69,438	66,980	64,522	62,064	94,908
Depreciation		143,999	132,480	121,882	112,131	103,160	13,000
Maintenance, Repairs		13,000	13,000	13,000	13,000	13,000	
Management, Staff							9,000
Overhead		9,000	9,000	9,000	9,000	9,000	6,000
Insurance		6,000	6,000	6,000	6,000	6,000	93,108
Mortgage Interest		105,300	103,093	100,776	98,344	95,789	
Total Tax-Deductible		349,195	333,011	317,638	302,997	289,013	275,622
Gross Income (loss)		(55,195)	(39,011)	(23,638)	(8,997)	4,987	18,378
Income Tax		0	0	0	0	2,493	9,189
Net Income (loss)		(55,195)	(39,011)	(23,638)	(8,997)	2,493	9,189
Less: Mortgage Prin. Pay		44,127	46,333	48,650	51,083	53,637	56,319
Plus: Depreciation		143,999	132,480	121,882	112,131	103,160	94,908
Less: Capital Gains Tax							52,574
Fernandez Cash Flow							
G&S Cash Flow	-234,000	72,275	66,642	61,413	56,050	52,016	49,353

Table III-13

Fernandez Properties  
 Billigburg Operations  
 \*required rent \$288,000 (G&S sub)

\*Building Cost \$1,530,000  
 \*Total proj. cost \$1,870,000  
 \*Mortgage \$1,683,000 @ 9.5%

Year	0	1	2	3	4	5	6
Purchase Cash Outlay	-187,000						
Sale Cash Proceeds							-12,127
Depreciation		122,399	112,608	103,599	95,311	87,686	80,671
Buildings Book Value	1,530,000	1,407,601	1,294,993	1,191,394	1,096,380	1,008,397	927,726
Mortgage Prin. Pmt.		18,445	20,197	22,116	24,217	26,518	29,037
Fair Mkt. Value	1,870,000	1,795,200	1,720,400	1,645,600	1,570,800	1,496,000	1,421,200
Assessed Value	467,000	448,750	430,100	441,400	392,700	374,000	355,300
Fair Mkt. (Land and-Landscape)							1,081,200
Sale Capital Gain							153,474
Rent (RMGR)		288,000	288,000	288,000	288,000	288,000	288,000
Less: Tax-Deductible Costs							
Property Tax		57,455	55,151	52,859	50,561	48,263	45,965
Depreciation		122,399	112,608	103,599	95,311	87,686	80,671
Maintenance, Repairs		13,000	13,000	13,000	13,000	13,000	13,000
Mgm't, Staff Ov'hd		9,000	9,000	9,000	9,000	9,000	9,000
Insurance		6,000	6,000	6,000	6,000	6,000	6,000
Mortgage Interest		159,884	158,132	156,213	154,112	151,811	149,292
Total Tax-Deductible		367,728	353,891	340,671	327,984	315,760	305,928
Gross Income (loss)		(79,728)	(65,891)	(52,671)	(39,984)	(27,760)	(15,928)
Income Tax		0	0	0	0	0	0
Net Income (loss)		(79,728)	(65,891)	(52,671)	(39,984)	(27,760)	(15,928)
Less: Mortgage Prin. Pay		18,445	20,197	22,116	24,217	26,518	29,037
Plus: Depreciation		122,399	112,608	103,599	95,311	87,686	80,671
Less: Capital Gains Tax							38,368
Fernandez Cash Flow	-187,000	64,080	59,546	55,148	51,102	47,288	-6,825
G&S Cash Flow							

Table III-14

Fernandez Properties  
 Billigburg Operations  
 \*required rent \$229,000 (G&S sub)

\*Building Cost \$1,000,000  
 \*Total proj. cost \$1,340,000  
 \*Mortgage \$1,206,000 @ 9.5%

Year	0	1	2	3	4	5	6
Purchase Cash Outlay	-134,000						-30,852
Sale Cash Proceeds		80,000	73,600	67,712	62,295	57,311	52,726
Depreciation		920,000	846,400	778,688	716,393	659,082	606,356
Buildings Book Value	1,000,000	13,217	14,473	15,848	17,353	19,002	20,807
Mortgage Prin. Pmt.	1,340,000	1,300,000	1,260,000	1,220,000	1,180,000	1,140,000	1,100,000
Fair Market Value	335,000	321,500	308,000	294,800	281,400	268,000	254,600
Assessed Value							
Fair Mkt. - (Land and Landscape)							760,000
Sale Capital Gain							153,644
Rent (RMGR)		229,000	229,000	229,000	229,000	229,000	229,000
Less: Tax-Deductibles							
Property Tax		41,171	39,512	37,853	36,231	34,584	32,937
Depreciation		80,000	73,600	67,712	62,295	57,311	52,726
Maintenance, Repairs		13,000	13,000	13,000	13,000	13,000	13,000
Mgm't, Staff Ov'hd		9,000	9,000	9,000	9,000	9,000	9,000
Insurance		6,000	6,000	6,000	6,000	6,000	6,000
Mortgage Interest		114,569	113,314	111,939	110,433	108,784	106,979
Total Tax-Deductible		263,740	254,426	245,504	236,959	228,679	225,642
Gross Income (loss)		(34,740)	(25,426)	(16,504)	(7,959)	321	8,358
Income Tax		0	0	0	0	160	4,179
Net Income (loss)		(34,740)	(25,426)	(16,504)	(7,959)	160	4,179
Less: Mortgage Prin. Pay		13,217	14,473	15,843	17,353	19,002	20,807
Plus: Depreciation		80,000	73,600	67,712	62,295	57,311	52,726
Less: Capital Gains Tax							38,411
Fernandez Cash Flow							
G&S Cash Flow	-134,000	49,413	46,414	43,617	40,963	38,469	-33,165

Table III-15

Fernandez Properties  
 Billigburg Operations  
 \*required rent \$235,000 (G&S sub)

\*Building Cost \$1,530,000  
 \*Total proj. cost \$1,870,000  
 \*Mortgage \$1,683,000 @ 5%

Year	0	1	2	3	4	5	6
Purchase Cash Outlay	-187,000						59,662
Sale Cash Proceeds							80,671
Depreciation		122,399	112,608	103,599	95,311	87,686	927,726
Buildings Book Value	1,530,000	1,407,601	1,294,993	1,191,394	1,096,083	1,008,397	45,007
Mortgage Prin. Pmt.		35,264	37,027	38,878	40,822	42,864	1,502,800
Fair Market Value	1,870,000	1,808,800	1,747,600	1,686,400	1,625,200	1,564,000	375,700
Assessed Value	467,500	452,200	436,900	421,600	406,300	391,000	
Fair Mkt. (Land and Landscape)							1,162,800
Sale Capital Gain							235,074
Rent (RMGR)	235,000	235,000	235,000	235,000	235,000	235,000	235,000
Less: Tax-Deductible Costs							
Property Tax		57,456	55,575	53,695	51,814	49,934	48,054
Depreciation		122,399	112,608	103,599	95,311	87,686	80,671
Maintenance, Repairs		13,000	13,000	13,000	13,000	13,000	13,000
Mgm't, Staff Ov'hd		9,000	9,000	9,000	9,000	9,000	9,000
Insurance		6,000	6,000	6,000	6,000	6,000	6,000
Mortgage Interest		84,149	82,386	80,535	78,591	76,550	74,406
Total Tax-Deductible		292,094	278,569	265,829	253,716	242,170	231,131
Gross Income (loss)		(57,094)	(43,569)	(30,829)	(18,716)	(7,170)	3,869
Income Tax		0	0	0	0	0	1,934
Net Income (loss)		(57,094)	(43,569)	(30,829)	(18,716)	(7,170)	1,934
Less: Mortgage Prin. Pay		35,264	37,027	38,878	40,822	42,864	45,007
Plus: Depreciation		122,399	112,608	103,599	95,311	87,686	80,671
Less: Capital Gains Tax							58,768
Fernandez Cash Flow							
G&S Cash Flow	-187,000	58,338	53,042	49,057	45,181	41,287	38,543

## Table III-16

## THE BILLIGBURG PROJECT

Number of units: 168, one to three bedrooms

Total cost of buildings: \$2,000,000

Average cost per unit: \$11,905

Average sq. ft. per unit: 1,040

Actual average cost per sq. ft.: \$12

Land occupied: 9 acres

Land acquisition cost (prepared): \$240,000

Type construction: wood frame and plaster; some prefabricated components; two and three story.

## Clark Constructors, Inc.

Construction Cost Analysis - Billigburg

	<u>Entire Project</u>	<u>Per Unit</u>	<u>Per Cent*</u>
Direct labor	\$ 940,000	\$ 5,595	47%
Materials	680,000	4,048	34
Equipment deprec. and operating exp.	100,000	595	5
Supervisory labor	100,000	595	5
Admin. and general overhead expense	<u>60,000</u>	<u>358</u>	<u>3</u>
Profit	2,000,000	11,905	100%
Land	240,000	1,429	12%
Landscaping	<u>100,000</u>	<u>595</u>	<u>5</u>
	2,340,000	13,929	117%

\* Actual percentage, for the Acorn project, as supplied by its builder.

Table III-17  
CLARK CONSTRUCTORS, INC.  
Balance Sheet at 1 January 1970

Assets

Cash	\$ 60,000	
Accounts receivable	<u>790,000</u>	
Total current assets	\$850,000	850,000
Inventories:		
Materials - wood, metal, fixtures		150,000
Work in process - incomplete buildings		800,000
Plant and equipment:		
Buildings and land	400,000	
Special equipment, tools, fixtures	300,000	
Vehicles and machines	600,000	
Tools, misc.	<u>50,000</u>	
Less: allowance for depreciation	<u>150,000</u>	
Net plant and equipment	1,200,000	<u>1,200,000</u>
Total assets		\$3,000,000

Liabilities

Accounts payable	200,000	
Mortgages payable	1,180,000	
Long term debt	500,000	
Accrued expenses	<u>120,000</u>	
Total liabilities		\$2,000,000

Ownership

Common stock	160,000	
Retained earnings	840,000	
Net worth		<u>1,000,000</u>
Total liabilities and net worth		\$3,000,000

## Table III-18

## CLARK CONSTRUCTORS, INC.

Income Statement for Year 1 Jan 69 to 1 Jan 70

Sales		\$ 6,000,000
Less: Cost of buildings sold		
Materials	\$ 2,820,000	
Direct labor	2,040,000	
Supervisory labor	300,000	
Management, staff, overhead	<u>180,000</u>	
Total	5,340,000	5,340,000
Less: Depreciation expense		<u>300,000</u>
Gross profit		360,000
Income taxes		<u>180,000</u>
Net profit		180,000

Notes:

- (a) Depreciation expense assumes an 8 yr. average life for machinery, tools, and equipment; zero salvage value; double-declining-balance method.
- (b) Net profit is 3% of sales, 18% of owners' equity.

Table III-19  
 FERNANDEZ PROPERTIES, INC.  
Balance Sheet at 1 January 1970

Assets

Cash	\$ 35,000	
Rents receivable	<u>37,000</u>	
Total current assets	72,000	\$ 72,000
Buildings - original cost	2,000,000	
Less: allowance for depreciation	<u>143,999</u>	
Net buildings	1,856,001	1,856,001
Land: at cost plus landscaping		340,000
Maintenance equipment and supplies		<u>11,000</u>
Total assets		2,279,001

Liabilities

Accounts payable		41,000
Mortgages - original value	1,800,000	
Less: principal paid	<u>21,919</u>	
Net: unamortized value	1,778,081	1,778,081
Long term debt		60,000
Accrued expenses		<u>19,920</u>
Total liabilities		

Ownership

Common stock - par value	300,000
Retained earnings	<u>80,000</u>
Net worth	<u>380,000</u>
Total liabilities and net worth	2,279,001

Table III-20  
 FERNANDEZ PROPERTIES, INC.  
Income and Net Cash Flow Statement  
For Year 1 Jan 69 to 1 Jan 70

Rents	\$ 377,000
Less:	
Interest expenses	200,069
Maintenance and repairs	13,000
Property taxes	71,896
Depreciation	143,999
Management and staff overhead	9,000
Insurance	<u>6,000</u>
Total tax deductible expenses	443,964
Gross income (loss)	(66,964)
Income taxes	<u>0</u>
Net income (loss)	(66,964)
Less:	
Mortgage principal payment	23,080
Plus:	
Depreciation	<u>143,999</u>
Net Cash Flow	53,955

Notes:

- (a) Utilities expense ignored: tenants will pay individually.
- (b) Assume property tax at \$122.90 per \$1,000 assessed value. Assessed value of entire Billigburg project-- buildings, land, and landscaping -- is 25% of "fair market value" (from Commerce Clearing House, California Tax Reporter, Vol. III, pg. 7015f: current San Francisco rates). Fair market value assumed \$2,340,000 in 1969 and declining by the amount of double-declining balance depreciation of the buildings, annually.
- (c) Income tax rate 50%.
- (d) Assume that policy is to maintain constant rent over the project life.

and operating real property is very rigorously tied to the prevailing mortgage rate of interest and may be expected to vary little from one real estate operator to the next. The Clark and Fernandez operations might be combined in one firm, colloquially a "developer." In any case, the Clark-Fernandez cooperation in the Billigburg project rather simply and accurately demonstrates the complex interaction of cost components responsible for housing's ex-subsidy high cost to the individual.

#### Assumptions and Qualifications

- a. Billigburg is acquired new, owned and operated for six years and sold at "fair market value" at the end of the sixth year. Six years is about the optimum period a private owner holds such property. The principal tax advantages of accelerated depreciation have been realized, and capital gains tax may be paid on any profit when the project is sold.
- b. The prevailing mortgage term is 9.5% annual interest on a mortgage up to 90% of total project cost (buildings plus land and landscaping). "Purchase cash outlay" is thus 10% of the total project cost, i.e., the original "fair market value." A fixed-payment, 25 year mortgage is assumed. Mortgage principal and interest payments are computer derived (program "&d057. lease on sys 12").
- c. Double-declining-balance depreciation, with \$200,000 residual value for Billigburg 25 years hence, is resumed. Depreciation payments are computer derived (program "&d057. least of sys 12").
- d. A level rent policy -- RMGR is assumed to be constant over the six years.
- e. San Francisco current property tax rates -- annual tax is \$122.90 per \$1000 assessed value: which is 25% of the fair market value. Here, the fair market value is estimated as the building's original cost declining at 4% per year, plus the cost of the land and improvements.
- f. 100% occupancy. If average occupancy were, say, 97%, then the RMGR must be increased by approximately 3%.

- g. Housing, especially that provided for low-income people, is historically a riskier-than-average investment: maintenance cost and the price for which the property can be sold several years hence are very uncertain. Most private firms seek 15 to 25 percent return on equity in projects or investments of this type: inflation at about 7% annually, 5% opportunity cost for funds not earning interest in a relatively risk free investment and 3 to 10 percent risk premium. Thus, in the following analysis, the RMGR is derived by salving for that rent which yields net cash flows whose internal rate of return is 15% over the six year period (on program "d057. irrpu on sys 12").
- h. Clark, Fernandez and G&S Mfg. Corp. are in the 50% tax bracket.
- i. The average cost of union craft labor in the Bay Area is \$7 per hour plus 33% for benefits (unemployment insurance, vacations, etc.) for an effective \$9.30 per hour.
- j. "Average monthly rent per unit" is:

$$\frac{\text{derived RMGR}}{(\text{168 units}) (\text{12 months})} = \frac{\text{RMGR}}{2016}$$

#### Objective and Analytical Technique

We wish to demonstrate the effect which the following have on RMGR:

- a. Owner's required return on investment
- b. Mortgage rate of interest
- c. Direct labor wage rate
- d. Any and all modularization, prefabrication, new architectural and construction techniques which change the total cost of a structure.
- e. Project ownership by a large firm for "tax loss" purposes.

To determine the required rate of return under given conditions, we must calculate the net cash flow for each of the six years Billigburg is owned. Discounting the cash flows back to zero present value yields the internal rate of return (IRR). We adjust the rent until IRR is 15% as assumed above.

Each year's net cash flow is found by subtracting total tax-deductible costs from rent revenue; 50% income tax is deducted from this gross income (or zero if a loss), to derive net income; then the cash mortgage principal payment is subtracted and the "noncash charge" depreciation added to yield net cash flow.

The cash flow calculation is different for Fernandez Properties as a division of G&S Manufacturing Corporation. The latter is assumed to have very large taxable income, so that only 50% of any net loss by Fernandez is felt in the G&S Net Cash Flow. Fernandez' "negative income" in this case offers a "tax loss" offset against G&S taxable income, while Fernandez' entire depreciation appears in G&S cash flow.

For Fernandez as an independent firm:

Net Cash Flow = net income (or loss) + depreciation - mortgage principal payment.

For Fernandez as a subsidiary of G&S: (for net income)

Net Cash Flow = net income + depreciation - mortgage principal payment.

For Fernandez as a subsidiary of G&S: (for a net loss)

Net Cash Flow =  $(1/2)$  net loss + depreciation - mortgage principal payment.

Cash flow in year six, when Billigburg is sold, is more complicated: The project will be sold at fair market value, \$1,800,000. However, \$1,930,153 is still owed on the mortgage; thus, the cash proceeds of the sale will be \$-70,153. But Fernandez shows a capital gain on the sale, because Billigburg's book value is \$1,291,440 (buildings) + \$340,000 (undepreciated land and landscaping) = \$1,631,440 which is \$228,560 less than the selling price; capital gains tax of 25%, or \$52,574 must be paid on this amount.

Year six cash flow becomes:

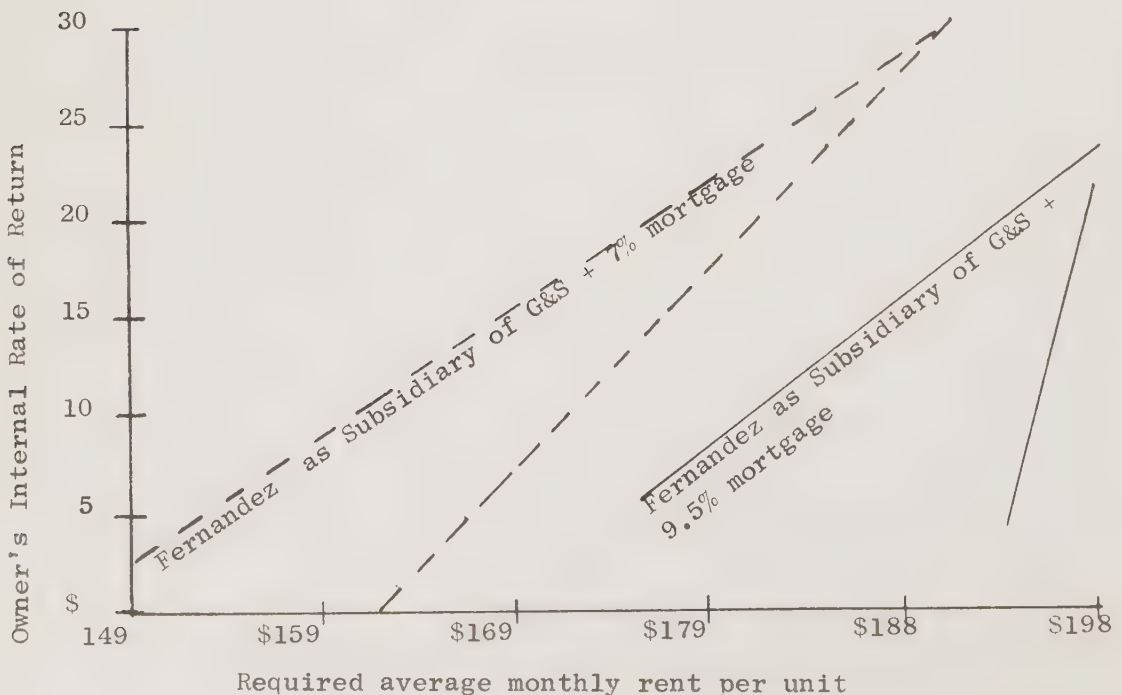
Cash flow = net income + depreciation + cash received (-cash paid) on sale - mortgage principal payment - capital gains tax.

## Results

- a. How sensitive to rent revenue is the owner's internal rate of return (IRR) on his investment in Billig-burg? Is IRR more sensitive for Fernandez Properties as an independent firm, than as a subsidiary of G&S? How significant are "tax losses" to G&S, in allowing it to reduce rent? Several levels of total rent (RMGR), from \$330,000 to \$400,000 were inserted in Table III-10 to show the significance of this relationship. Figure III-5 was constructed from the resulting IRR's: the solid lines are at 9.5% mortgage interest rate, the dashed lines at 7%: So given: (a) \$2,000,000 cost of buildings  
(b) \$2,106,000, 90%, 25 yr. mortgage, at 9.5% annual interest  
(c) the explicit assumptions in the section on Assumptions and Qualifications

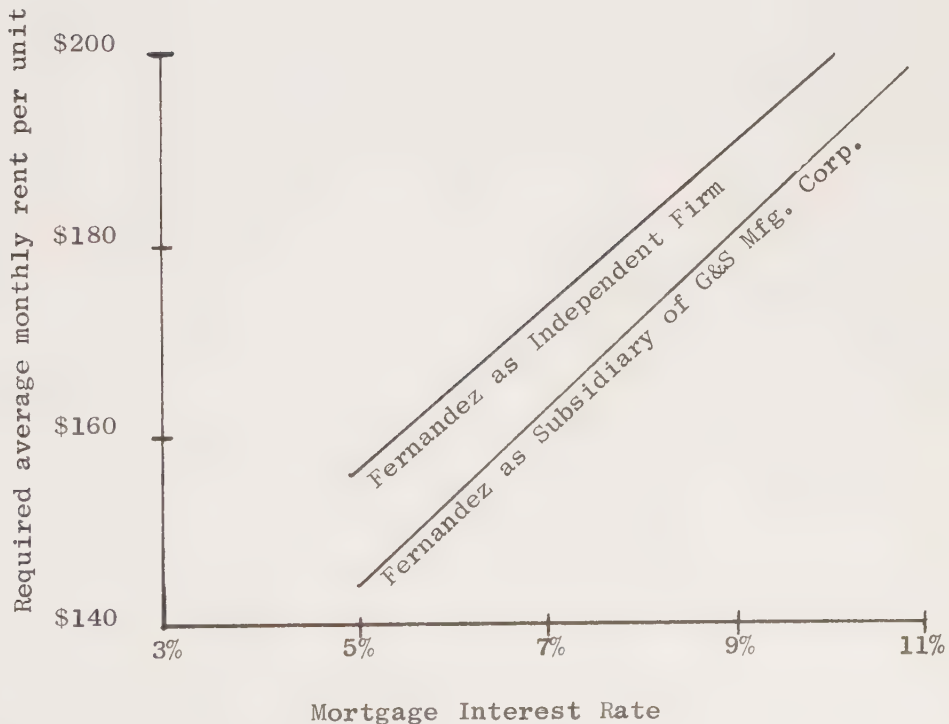
Fernandez must charge: \$195 average monthly unit rent as an independent firm, \$186 average monthly unit rent as a subsidiary of G&S. Notice the lines' steep slope: owner's return is very sensitive to rent, and vacancy rate, especially if the owner is an independent firm.

Figure III-5



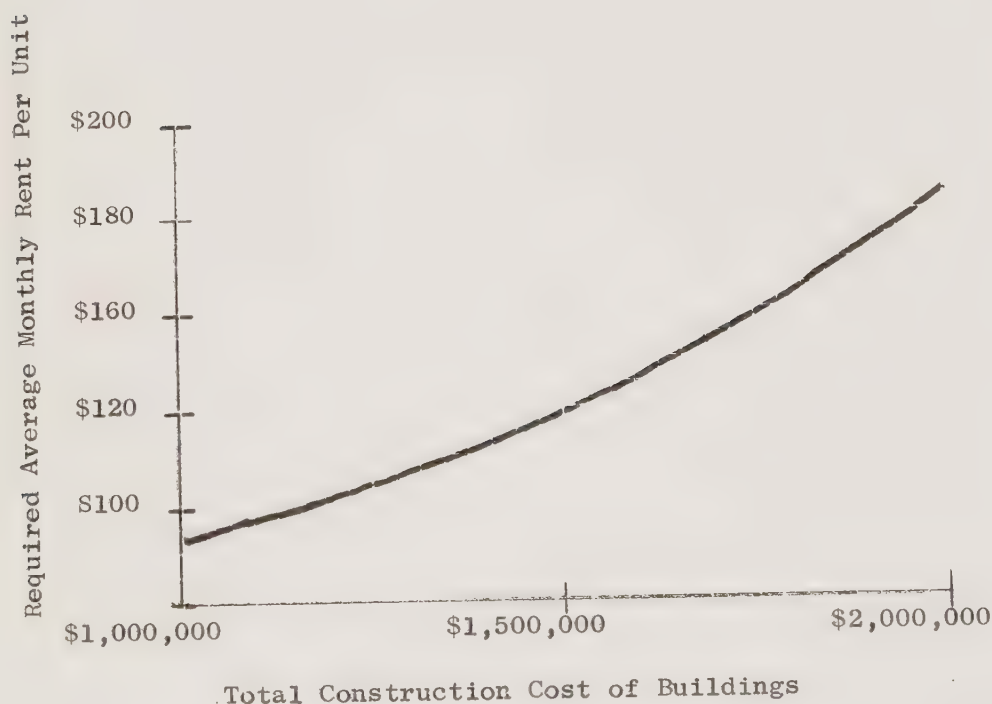
- b. How much affect does mortgage interest rate alone have on required rent? The rate is now 9.5%, as in (a) above. Other factors constant, what if it dropped to 7% or 5%. The cash flow calculations in Tables III-11 and 12. indicate that the average monthly unit rent could be reduced to \$164 per month with a 7% mortgage, and to \$145 per month with a 5% mortgage.
- c. What if construction laborers could be hired or \$3.50 per hour, rather than at the prevailing average \$7 per hour rate? Refer to Table III-16. If such were the case, the direct labor component of the entire project would be reduced to \$470,000. Total project cost is \$1,870,000, and the mortgage is \$1,683,000 at 9.5%. Land and landscaping are \$340,000. The required average monthly rent per unit, considering Fernandez Properties as a subsidiary of G&S Manufacturing Corporation, falls to \$142 per month, as calculated in Table III-13.

Figure III-6



- d. What if new technology, less expensive labor, or a combination of the two allowed the total cost of constructing the Billigburg Project to be reduced by one-half to \$6 per square foot? Land and landscaping is still \$340,000; mortgage interest 9.5%. The calculation in Table III-14 indicates that required average monthly rent per unit, Fernandez, as a subsidiary of G&S Manufacturing Corporation falls to \$114 per month.
- e. The relationship of required average monthly rent per unit, to the total cost of construction, is shown in Fig. III-7:

Figure III-7



- f. A more realistic possibility than (d), is that construction cost, for several reasons, might fall about 25% to \$1,530,000 and mortgage rates might possibly decline to 5%. Table III-15 shows that average monthly rent per unit is \$116 (Fernandez as a subsidiary of G&S Manufacturing Corporation).

- g. The "Acorn" project builder estimates that, had the total project been 100 units instead of the 500, total building cost would have been about 10% higher; if only 25 units, about 25% higher; relatively constant beyond these extremes.

### Conclusion

This analysis demonstrates the relative importance of direct labor, total construction cost, and mortgage financing in determining the unsubsidized total cost of providing housing, i.e., the rent per living unit the private owner must charge in order to receive a reasonable return on his investment in the dwelling.

The cost breakdown for Oakland's "Acorn", an attractive and well managed multi-family housing area, was a hypothetical situation to illustrate how builders typically structure their investment to cover the cost of capital and receive the desired return on equity.

The National Housing Partnership idea, proposed by HUD, attempts to encourage many large and profitable firms like G&S Manufacturing Corporation to invest in housing, in order that they might realize the "tax loss" cash flow improvement demonstrated here.

The high mortgage interest rate is determined by the state of the national economy. Federal subsidy, through various interest rate (BMIR) programs like HUD section 221 (d)(3), 235 and 236 can reduce the effective mortgage rate to zero. The difference, however, must come from the taxpayer's pocket.

"A fundamental answer to the housing problem is the end to inflation and lower interest" -- Arthur Burns, chairman of the Federal Reserve.

## D. HOUSING PROGRAMS

Introduction - The Vari-Flex Component Building System is the creation of two Stanford University Construction Management students, Sandy Marenberg and Lee Peterson. It was designed in the Spring of 1970 in response to a Housing and Urban Resource Study for the City of San Francisco, (the Engineering 235 course from which this final report originated). Sandy and Lee developed new building components (any function element of a housing unit) and combined them with simplified methods of construction to produce practical, attractive, flexible and varietal housing units at substantial cost and time savings. The system results from the application of many of the best innovations from the industrialized housing systems industry. It is expected that, if desired, mass production of the components could begin immediately.

The Vari-Flex system of building is a completely componentized method of construction in which all walls, roofs and floors are factory produced as panels, including doors and windows. The Vari-Flex system combines with this panel component subsystem the advantages of a plant-manufactured utility core and/or utility core panel component.

In acknowledgement of due credit, the creators of this system wish to thank Mr. Richard Martin of the Stanford Research Institute for his invaluable contributions to the system's consumer orientation. It is because of his work with his "Flexible Dwelling" concept that the Vari-Flex system is as varietal and flexible as it is.

### 1. Consumer Orientation

Like other industrialized housing systems, the Vari-Flex system depends on an aggregated market with an effective demand. This type of market is best served by a consumer-oriented approach throughout all phases of the housing system.

The requirements of the consumer are based on his needs

for three fundamental factors which, although often considered separate, are purchased together and are composite parts of a housing system:

1. The neighborhood, community and their location.
2. The dwelling structure and its amenities.
3. The money and financial terms to acquire them.

While it is basically the responsibility of the developer to meet the requirements 1 and 3, it is a definite prerequisite that the building system be as flexible as practical in order to insure optimal solutions to requirements 1 and 3. Also, the building system must satisfy the consumers' requirements for the dwelling structure and its amenities.

The orientation of the Vari-Flex system, directed to the consumer such as it is, includes the now separate activities of new construction, renewal, and rehabilitation into a continuous cycle of production, use, maintenance, modification, exchange and recycling of materials. This is to say, that the inventory of Vari-Flex dwellings would be maintained in like-new conditions. Such a system lends itself to the innovative new methods of financing and taxation. Such a system, designed for change, provides the basic tool for self-help construction and up-keep; so as to help eliminate deterioration of communities and to help remove sub-standard housing as a source of social injustice.

Also, since a household is dynamic, the need to accommodate change is an important requirement of the housing unit. A family ages, grows, adds or subtracts members; it expands or reduces its needs for space; it demands an endless variety of amenities and discards them as desires change; and it is as mobile as employment demands or finances permit. The Vari-Flex system is as dynamic as its users. Rather than being fixed in both place and configuration, as conventional housing is; which forces the user to contend either with a

unit not meeting their needs or with a pregression of unnecessary moves, the Vari-Flex system is, as its name implies, varietal and flexible. The Vari-Flex dwelling unit can be assembled in an almost unlimited number of configurations, expanded or reduced in size and amenities, and modified in arrangement by the consumer himself.

The Vari-Flex system is a structural framework that permits the user to subdivide the interior space, to install appliances and utility devices in varying arrangements and to create more or less living space as his requirements change. It provides a dwelling that can vary as the consumer, the community and the technology vary, yet one that can be held in a given configuration at any time if that particular configuration is desirable. It is "a structure in which flexibility is an asset for change, not a dictate for living."

#### Marketing

The Vari-Flex system is produced from components that originally can be arranged either on or off-site and can be rearranged on-site. The components can be furnished in a wide range of styles and features. They can be disassembled, refurbished off-site and reused in other dwellings. The components can be leased as well as sold.

From a marketing point of view, this is how it works. As an example, consider a single-family detached dwelling type subdivision. Each dwelling unit is placed on its individual lot in such a way that future expansion is possible. The units are produced from Vari-Flex system components. The dwellings are designed to meet the demands and needs of the consumers in the market area as any properly designed tract house would be. The system places no constraints on the design of most, if not nearly all, house designs.

In time, the dwelling user may desire to add a den or another bedroom. He then contracts the local dealer,

representative or franchisee of the Vari-Flex system and informs said company of his needs. He then arranges to either have the room prefabricated in the factory as a volumetric module and shipped to his site or to have the frame and panels shipped unattached so that he can attach them himself at a lower cost. He also has his choice of finished or unfinished panels to save finishing costs.

The room is then transported to the site and erected. The consumer has the option of doing his own site-work (foundation and connections), contracting them himself, or contracting with the Vari-Flex dealer. Since the room comes pre-wired, pre-plumbed and since there are no heating ducts the utility connection process is minimized. As for connections to the existing structure, again the techniques are simplified by the very nature of the system. Where it is necessary to remove a panel, it can be done in several minutes by the consumer himself, using only a screwdriver. An existing exterior wall panel would be removed and replaced with an interior door panel, some existing exterior wall panels would be temporarily removed for several minutes while the new room is bolted to the existing structure using gaskets to allow independent movement of the units. The removed exterior panel then can be saved for future use, traded to another consumer in need of such a component, or sent back to the factory for refurbishing. The new roof panels can be attached to the existing fascia or, where there are existing overhanging roof panels, the panels themselves can be attached and sealed. The consumer then has a new room on his house with the very minimum of inconvenience and cost. There is no need for inconvenience to the activities in the existing unit, as is the case with conventional add-a-room projects, excepting the several minutes when panels are removed. The cost is less, the time is measured in minutes rather than days or weeks and the quality of the product is

certain. If and when the dwelling user desires to remove the room, the process works similarly.

One more point. Should the original owner of the house decide to sell it, his dwelling unit should have a premium resale value since the available market is expanded by the fact that bedrooms or dens or whatever can be added or subtracted to meet the individual demands of a potential buyer. With a Vari-Flex system house, the problem of having potential buyers with spacial needs that can't be satisfied are, thus practically eliminated. Prospective buyers will also put a premium on such design flexibility for their own future uses.

In summary, the dwelling is meant to be whatever the user wants it to be.

#### Principles of Design

The basic strategy of industrialized housing production is to obtain diversity in design with commonality in production processes and facilities. The objective is to design for standardization and mass production in a way that will provide more choice, more beauty, more functionality, more freedom, not less. It is worth remembering that practically all of the look-alike, "ticky-tacky" housing we hear complaints about today was not produced in factories. It was produced on site in the prevailing fashion: board by board. Any lingering notions about the endearing qualities of traditional construction methods can be quickly dispelled by looking at a typical tract subdivision. If this originality, then we have nothing to loose by building our housing in factories.

From a marketing point of view it is essential to have the capacity to produce attractive and viable communities, not just variations of a single theme. The significant principle involved here is that the consumer, or user, has the final say in the housing design. Today, most people

have come to expect their home to do more than fulfill basic requirements. A dwelling unit must be an object of pride and means of self-expression. An understanding of consumer needs and preferences is an important ingredient in building design, as it is in the other phases of the system.

The building system itself, unless it is very restrictive, need not govern the environment of a project or the livability of an individual dwelling unit. The individual architect designing with the system must have full control over the system, and not vice-versa. This allows the architect to create an environment after review of the local situation. Flexibility in design thinking is perhaps an essential prerequisite of good flexibility in design. But, it cannot be overstressed that the design prejudices of the architect designer must become secondary and cannot be imposed on those of the user. The challenge for the architect is to recognize the consumer's requirements and translate them into a dwelling that, in use, not only satisfies those requirements, but allows the consumer the experience those factors of esthetics, function, and design economy that the architect brings to the unit. In summary, often designs are advanced in the building industry which are acclaimed by architects but fall flat when placed on the market because they fail to meet the needs and preferences of the consumer.

## 2. Vari-Flex Component System

Applying the previous concepts to the Vari-Flex system resulted in the housing units being made of interchangeable functional elements to accommodate the changing requirements of a single occupying household and to meet the requirements of a succession of occupying households.

The following set of criteria was used as design principles when creating the system:

- a. Separation of the dwelling unit from the site.
  - Dependency of the dwelling unit on conventional

site foundations for structural integrity limits dwelling configurations.

- Structural independence of the dwelling unit is a prerequisite for componentization.
- Structural independence of the dwelling unit provides the opportunity to develop and use alternatives to present day real estate financing and taxation, while still allowing full use of today's principles.

b. Separation of panels from structural functions.

- Permits variation of the dwelling by changing surfacing materials and appearance while maintaining the structural integrity of the dwelling.
- Permits flexibility for future expansion or contraction of the dwelling by allowing panel removal while maintaining the structural integrity of the dwelling.
- Detailing and change of style can be accomplished by the addition of appearance elements.
- Refurbishing of the dwelling unit and the adjustment of the structure to varying climate, foundation and load-bearing conditions can be accomplished by the replacement of panels.

c. Division of housing into utility and living functions consistent with the consumer's physiological requirements.

- By producing living and utility components separately and then combining them on the site, both economies in production and versatility in dwelling configuration may be achieved.
- The manufacturers of living space in factory-fabricated utility components is not as desirable as complete separation due to the fact that it tends to limit the manner in which both functions are served in the dwelling.

d. Extension of the dwelling to the lot.

- The definition of housing space by perimeter walls is arbitrary and the confining of household activity to a box or a series of boxes is not consistent with consumer requirements.

By using the above set of criteria the Vari-Flex system developed into a factory fabricated components system. It is felt that this type of housing system allows for the

optimization of all the preceeding principles.

The dwelling components are factory fabricated for assembly in a variety of configurations. Components can be added or removed from the completed dwelling at any time after assembly. The components can be pre-assembled and delivered to the site as completed volumetric modules or can be transported as separate panels, cores and structural frames. This allows for the previously mentioned continuous cycle of production, use, maintenance, modification, exchange and recycling of materials. That is to say, the Vari-Flex system has designed into it, the concept of new construction (production), renewal (maintenance to keep the housing maintained like-new) and rehabilitation (modification to keep the housing up-to-date).

#### Codes, Rules, and Regulations

The Vari-Flex system is designed to meet California's factory-built housing law, FHA standards, and other similar performance codes. Local building codes and other similar specification codes can also be met, but with more restrictions on varietal ability and flexibility than is optimal.

The National Plumbing Code, National Electric Code and Underwriters Laboratory approval of individual components is possible.

#### The Components

The Structural Space Frame Component Subsystem - This subsystem consists of the load-bearing structural steel spaceframes used as a skeleton for the system. It provides the structural integrity of the system, independent of site, foundation or panels. The structural system lends itself to a full range of dwelling types from single-family detached to high-rise apartments. The gage and weight of the steel will depend on the specific load requirements. For the dwelling configuration and style shown in the included drawings, 4 x 4 x  $\frac{1}{4}$  inch hollow steel posts and 12 x 4 inch x 10 GA

CONSTRUCTION DETAILS: \_\_\_\_\_ NO SCALE

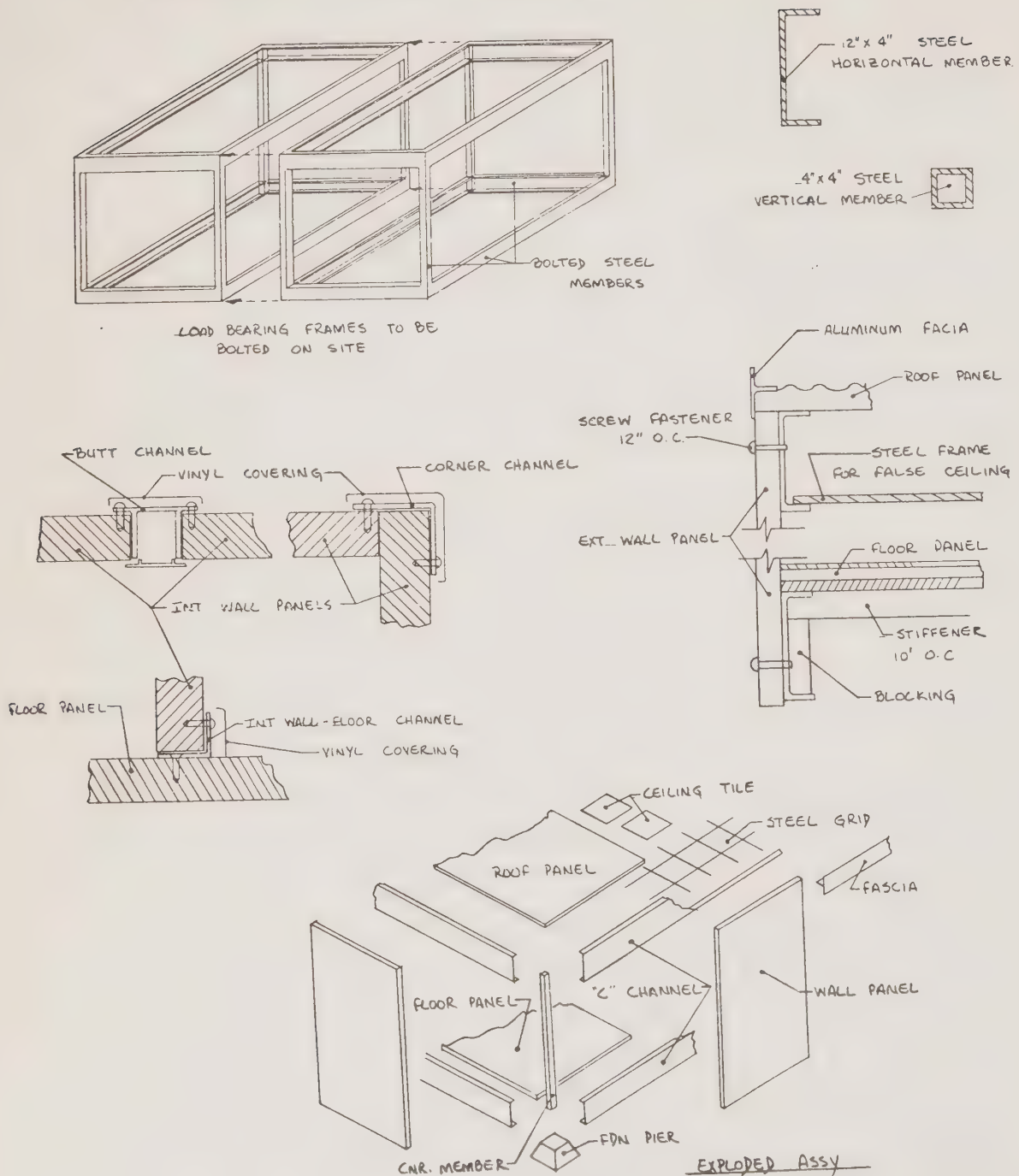


Figure III-8. THE STRUCTURAL SPACE FRAME  
COMPONENT SUBSYSTEM  
(Construction Details)

"C" channels are appropriate.

The frame is composed of a light gage cold-rolled steel that resists all vertical and lateral loads, as well as bending moment resisting. If the frame is put together in a factory where proper controls are available, it will be welded together. When assembled on-site, it will be bolted to allow for larger tolerances. When more than one frame is required per housing unit, they will be bolted together on-site using gaskets to allow independent movement of the units.

One great advantage of using a light gage moment resistant steel space frame in housing construction is the resulting flexibility of the system. It carries virtually all the structural load thus freeing the walls from being load-bearing. It is dimensionally stable (as opposed to lumber) and does not warp or buckle and is not subject to decay. Also, any architectural arrangement of the spaceframes is possible: side to side, end to end, side to end, stacked and etc. And the system flexibility does not diminish after installation.

The size limitations of height, width, and depth of any one spaceframe is controlled by the highway transportation regulations. But, by bolting them together on-site, an almost unlimited number of shape and size variations can be designed.

The rationale for the selection of steel as the structural frame is categorized by:

- The relative stability of steel prices as opposed to lumber.
- The availability of steel as opposed to structurally competitive plastics.
- The better strength to weight to cost ratios of steel.
- The dimensional stability, high rigidity and permanence of steel.
- The effects of corrosion can be negated by use of

- corrosion resistant steels such as "Corten", or by treatments such as galvanizing.

When the frame is stacked more than 3 stories, supplementary structural support is necessary, such as a concrete and steel framework to stack the individual units in. Also, fire codes require a more stringent set of specifications when buildings rise over 3 stories, which requires modification in the structural elements. The supplementary concrete and steel high-rise frame meets this fire requirement.

#### The Panel Component Subsystem (See Fig. III-8)

There are three basic types of panels in the Vari-Flex system - wall, roof, and floor. All panels are non-structural and therefore can be relocated or entirely removed without disturbing the structural integrity of the unit.

#### Wall Panels

The wall panels are non-load bearing. There are two basic types of wall panels - exterior and interior. The basic constructional difference between the two is 1) the extra thickness of the foam in the exterior panel and 2) the surface skins of the panels. This is necessary due to the difference in functions of an exterior and interior wall.

The Vari-Flex wall panel system consists of sandwich panels with polyurethane rigid foam cores. The exact thickness and density of the core varies with the specific requirements of the housing to be produced. Similarly, a variety of surface skins are feasible. For the house shown on the included drawings, the exterior panel is made up of a recommended interior surface of plastic-faced hard-board, add-to-board (though vinyl coated gypsum board is almost as good), a center core of polyurethane rigid foam, one and a half inches thick with a density of 2.30 lbs. per cubic ft., and an exterior surface of the consumer's choice from a list of plywood, redwood, aluminum siding, or asbestos. It is certainly possible to use other surface materials, but

these seem to be the optimal ones at the present time.

#### Polyurethane Rigid Foam

As mentioned, most of the benefits of the panel are due to its core material. The panels are lightweight, rigid, extremely good insulators, and are thinner than conventional 2 x 4 wood stud and gypsum board walls. Since the panels are thinner, they take up less floor space and allow more usable space. Yet, due to the structural characteristics of the foam, there is no loss in structural integrity.

The Upjohn Company, CPR division, is a major producer of the foam. It has a nationwide series of fabricators, production and development centers and sales offices. In the San Francisco area there are three fabrication centers and one sales office. Most of the figures below refer to CPR urethane rigid foam, though there are over twenty-two commercial foams available for use as the core. Most of these foams have been evaluated for dimensional stability, total shear and foam in place cubic ft. density. Many foams exhibit growth in one, two, or all three dimensions. Other foams grow in two planes and shrink in a third. The use of CPR figures does not imply an endorsement. CPR figures tend to be more complete than others, so they are used here. A detailed study must be made before deciding which commercial foam is best for any set of requirements.

No existing insulating material is more efficient or versatile than rigid urethane foam. It has the lowest K-factor of any commercial insulation material. The insulating effectiveness of the foam is the result of circumjacent, fluoro-carbon filled, closed micro cells. This make-up accounts for its low thermal conductivity and its extremely low moisture-vapor permeability and a high resistance to water absorption. Added to this is a symmetrically formed cell structure, which provides great strength along all axes. This unique cell structure also accounts for its high

strength/weight ratio (range of 1.85 to 2.3 lbs. per cubic ft).

This rigid cellular plastic can be purchased as a system or wet pack, comprised of two liquids that, when mixed, can form a rigid mass 30 times its original volume, or as a rigid pre-formed material. Urethane's insulation capacity is almost twice its nearest competition. It is a good sound attenuation agent.

The Upjohn Company has an annual capability to produce 70 million pounds of isocyanates (the basic commodity for making urethanes). Its CPR division has developed 480 urethane formulations to meet exacting specifications and design functions. Thus, unlike with lumber, there is no immediate depletion problem.

Table III-21  
THERMAL PROPERTIES OF URETHANE FOAM (UPJOHN)

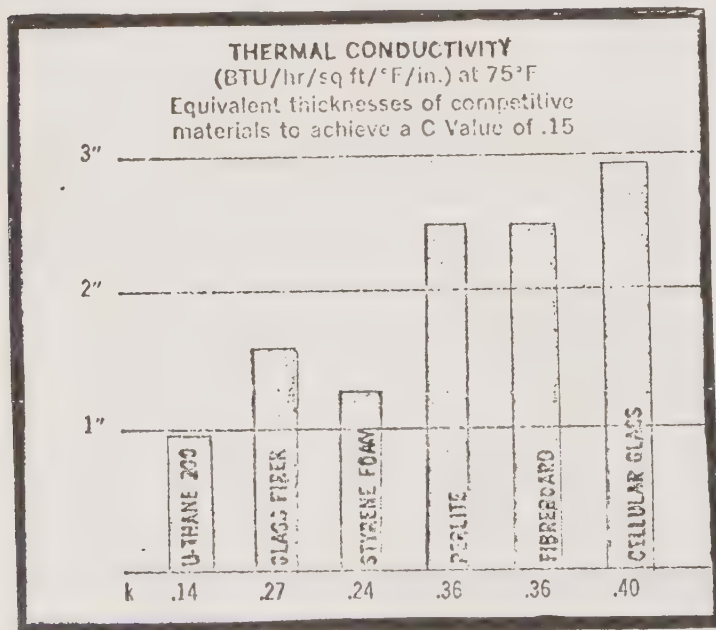


Table III-22  
THERMAL CHARACTERISTICS FOR CPR  
URETHANE FOAMS  
K-FACTOR = 0.14

<u>Overall Thickness</u>	<u>R-Factor</u>	<u>C-Value</u>
Inches		
5/8	4.16	.22
3/4	5.26	.17
1	7.14	.14
1 3/16	8.33	.11
1 7/16	10.00	.09
2	14.34	.065
3	20.00	.05

Rigid urethane comes in a variety of forms. It is available as slab or board stock and pipe insulation, as well as foamed in place systems, which may be poured, frothed or sprayed right on the job. CPR urethane board stock is available in sheets or buns of 8, 9, and 10 ft. lengths, trimable to 18 in. high by 48 in. wide, or in custom sizes and shapes.

The mechanical properties of urethane foams varies per form and chemical breakdown. The table on the following page (Table III-23) give the values for CPR urethanes.

Frothing (a modification of pour-in-place) is the recommended form of urethane for curtain walls, stressed skin panels and sandwich panels. In frothing, the mixture is dispensed partially pre-expanded - like aerosol cream. Frothing requires special equipment and an extra blowing agent for immediate pre-expansion; final expansion then occurs as the chemical reaction goes to completion. Since frothing exerts less pressure, fewer forms or jigs are needed. It

Table III-23  
THE VALUES FOR CPR URETHANES

Physical Property	Test Method Information			Pour	Froth
	Test Temp	ASTM of Method	Test Units	Isonate CPR 323	Isonate CPR 328-E
K-Factor	74°	C177	BTU/Ft <sup>2</sup>	0.11-0.14	0.11-0.14
Closed Cell Content	74°	D1940	%	93	90
Coefficient of Linear Exp.	-	N.A.	-	-	-
Water Vapor Transmission	74°	E96	perm-in	2.0	2.0
Water Absorption	74°	D2127	lbs/ft <sup>2</sup>	0.04	0.04
Flame Resistance	74°	D1692- 67T	N.A.	S.E. 0.9 in. /	S.E. 45 sec.
Comprehensive Strength		D1621	p.s.i.		
Parallel	74°			32	34
Perpendicular	74°			20	20
Compressive Modulus		D1621	p.s.i.		
Parallel	74°			500	460
Perpendicular	74°			250	220
Shear Strength		C273	p.s.i.		
Parallel or Direction of	74°			26	30
Tensile Strength	74°	D1623	p.s.i.		
Parallel				46	48
Perpendicular				35	37

Notes:

1. Parallel properties measured in direction of rise.
2. S.E. means self extinguishing

can be brought to the job, to the factory in concentrated liquid form, shipped in tank cars or drums. It sets into a strong, cross-linked, closed-cell plastic that bonds securely to most materials, including most metals, gypsum board, brick, asbestos, paper and wood. Foaming and fabrication thus become simultaneous. Its adhesion and strength allow thinner gage skin materials with no loss in structural strength or insulation efficiency.

The characteristics of urethane rigid foam are, in summary:

1. Lowest thermal conductivity
  - Less insulating material needed.
2. Low moisture-vapor permeability
  - Additional vapor barriers rarely needed.
  - Water absorption becomes negligible.
  - Condensation and corrosion minimized.
3. High strength
  - Can add to structural strength.
4. Dimensionally stable
  - Will not sag or buckle.
  - Does not pack down or crumble.
5. Economical
  - Savings on initial cost.
  - Savings on long-term performance.
6. Easy to install
  - Lightweight, easy to handle.
  - Ordinary hand tools may be used.
7. Durable
  - Will not lose its insulating efficiency.
  - Resistant to solvents and chemicals.
  - Allows wide choice of adhesives.
  - Unaffected by most aromatics and aliphatics.
8. Self extinguishing fire retardant
  - Per ASTM 1692-b7T
  - Per Fed. Spec. HHI-I-00530

9. Unaffected by fungus or mildew
  - Will not attract vermin.
10. Odorless
  - Will not generate or absorb odors.

Some polyurethane foam core sandwich panels have been approved by the Twining Laboratories, ICBO and FHA-VA authorities. Kaiser Aluminum and Chemical Corporation has developed commercial production techniques for several varieties of skins with polyurethane foam cores. One application of the Kaiser process is used by Stanford Builders, Inc., of San Jose, California (no connection to Stanford University). The basic wall panel used consists of an aluminum outside sheet eight ft. high in varying lengths, a polyurethane center approximately three in. thick and a plastic laminated interior wall to be used for housing in the South Pacific. They claim the 3 in. of polyurethane equals approximately 3 ft. of concrete insulation.

Conclusion: In summary, polyurethane insulation is an ideal core for sandwich panels because of its high strength/weight ratio. Such panels can be manufactured by laminating facings of thin, high-strength material to both sides of a core of rigid polyurethane foam. The use of polyurethane sandwich panels cuts down the on-site labor and provides better quality control of the product.

#### Roof Panels

The roof panels demonstrate excellent thermal insulation and high bearing strength. They are also polyurethane core sandwich panels. The exterior surface is of corrugated aluminum and the interior surface can be any of several common materials. For the housing unit example depicted herein, 1/4 in. hardboard interior skin. No finish is necessary for the interior skin of the example house since a false ceiling system is also used. The example roof, with one and a half inches of polyurethane foam with a density of 2.3 lbs. per

cubic ft., is designed for a roof loading of 30 psf.

### Interior Wall Panels

The interior wall panel is constructed of a polyurethane rigid foam core, one and a quarter inches thick with a density of 1.85 lbs. per cubic ft.; and skins of the same plastic-faced hardboard, one-quarter in. thick. The exterior panel has a thicker and denser core since its performance requirements are greater.

The benefits of this type of sandwich panel evolve mainly from the benefits of the polyurethane rigid foam core. Other benefits include that the panels are constructed with surface materials that require little maintenance and have long lives. Soap and water is all that is needed on the aluminum and plastic coated hardboard surfaces. The lumber doesn't even need that, just a coat of stain or oil every 5 years. Since the exterior panels cover the steel frame, there are no exposed beams or columns to paint. The panel is virtually fire proof and earthquake proof. The skins also distribute loads and take impact and shear loads.

### Floor Panels

The floor panels are also of sandwich panel design, but instead of polyurethane foam, egg-crate wood framework is used for the core. The blocking is made of 2 x 2 lumber placed one foot on - center in both directions. The voids are filled with an inexpensive but functional fiber glass insulation. The exterior (bottom) skin is a treated plywood. The interior surface is plywood covered with a seamless plastic coating. A vapor barrier of 6 mil visqueen is used under the floor. The panels are structurally reinforced by stiffeners and blocking at their joints, and are designed for floor loads of 40 psf.

This panel is better suited for use as a floor than a polyurethane core panel would be. Its sheer strength, rigidity, and crushing strength are superior to that of

polyurethane core panels. The thicker and heavier section and lower insulation properties are still superior to traditional flooring systems.

The plastic coated wood interior surface is a functional and beautiful finish for a floor. However, the consumer has the opportunity to cover it with another finish if so desired.

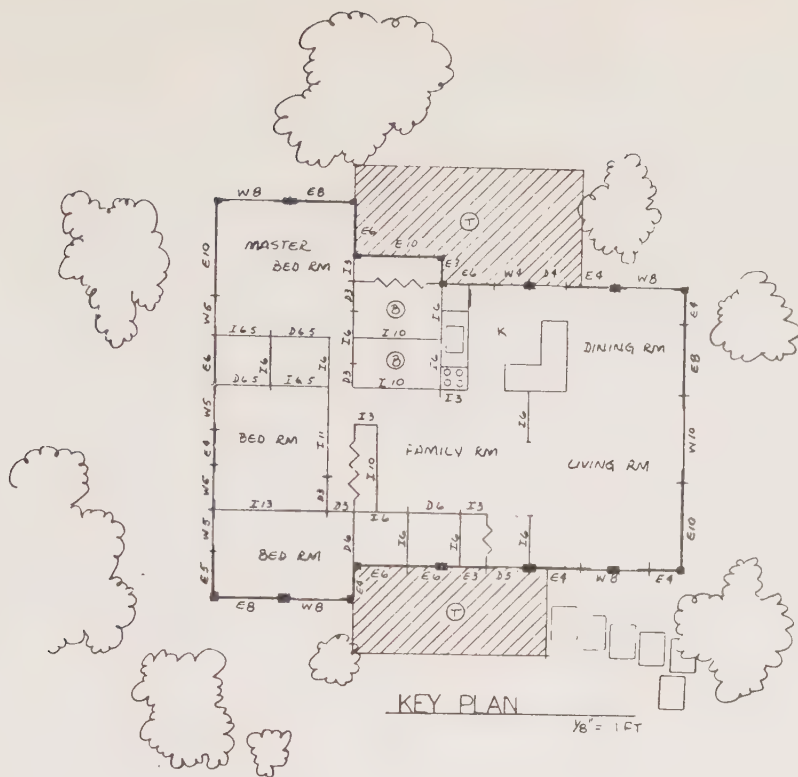
#### False Ceiling Panels

To obscure the view of wiring etc. that run through the space below the roof and act as the upper support for interior wall panels, a false ceiling subsystem has been adopted. This subsystem is made-up of a steel frame and acoustical tiles. The subsystem is a completely accessible one since the tiles can be removed independently. Maintenance to the space above can be conducted without disrupting day-to-day activities. The ceiling subsystem is also capable of satisfying changing design requirements. This outstanding flexibility is extremely useful since it permits the rearrangement of ceiling tile, light fixtures and interior wall panels with ease and economy.

#### Window and Door Panels

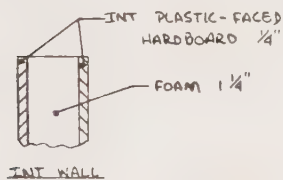
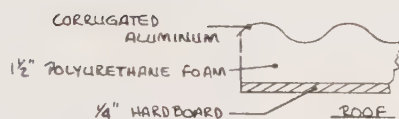
Doors, windows, and other hardware are placed in block-outs in the Vari-Flex wall panels. In this way, all panel joinings are standardized. The Vari-Flex panels can accommodate conventional standardized doors and windows but, doors of the pivot type, mounted on pivot bearings top and bottom are recommended. This type of arrangement will avoid loads on side frame members of the jamb. The use of door and window panels permits greater design freedom and allows for additional structural strength.

A recommended type of exterior residential door is a polyurethane foam core, galvanized steel door. A 1 3/4 inch steel shell is foamed-in-place with six pounds of polyurethane. The door provides protection against cold with



# FACTORY PRODUCED

- B BATH UNIT
  - T TERRACE UNIT
  - W4 4-FT EXT PANEL  
W/ WINDOW
  - E8 8-FT EXT PANEL
  - I6 6-FT INT PANEL
  - D3 3-FT INT PANEL  
W/ DOOR & FRAME
  - D5 5-FT EXT PANEL  
W/ DOOR
- FOUR 8' & TWO 10' STEEL FRAMES



## PANELS

NO SCALE

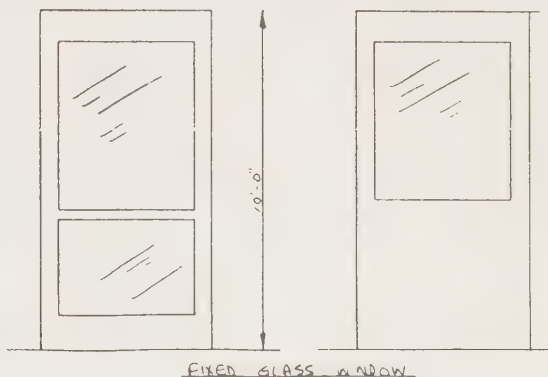
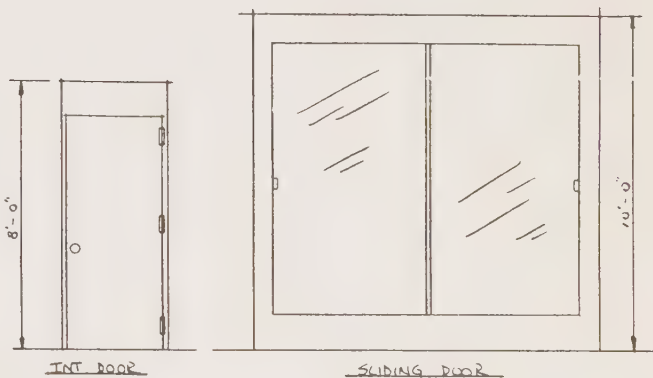
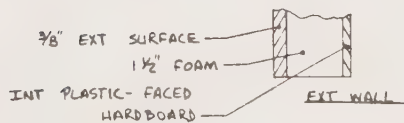
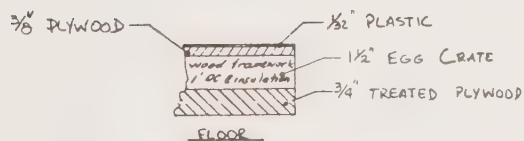


Figure III-9. ROOF, WALL, FLOOR, DOOR, and WINDOW PANELS

insulation equivalent of a 70-inch thick plate glass window. It has a high strength-to-weight ratio and almost no moisture absorption or vapor permeability. Temperature on the inside of the door remains virtually the same as room temperature, thus eliminating condensation problems and the need for a storm door.

### Closets

Closets and other similar storage spaces are simply interior and exterior wall panels combined into a functional arrangement. Therefore, they may be combined either in the factory or on-site.

### Summary

Vari-Flex system wall, roof and floor component panels can be produced in any size or shape desired by the producer. This allows for a maximum of freedom in design. Surfaces on these panels are infinite in variety and combination. Panels, both interior and exterior, may be removed or replaced, or additional panels can be installed at any time. Floors, walls, and ceilings may be finished (where necessary) at the factory or on-site as desired. The recommended materials in the example house drawings need no finishing, that is, they need no paint, no wall paper, no varnish, nothing. They are low-maintenance materials. But, if finishing is necessary on the surface materials desired by the consumer, he can select the colors and textures in advance. The consumer also has the option of finishing them on-site, possibly as a self-help project. But, they can be produced, finished, delivered, and erected without extra on-site work.

In conclusion, there appear to be no limits to the flexibility of design or variation in the panel size, shape or surface treatment obtainable with the Vari-Flex system.

## The Component Assembly Subsystem

A key element of the Vari-Flex system is its component assembly subsystem. It is this subsystem which allows the system to be as flexible as it is. The subsystem consists of aluminum channels, PVC (vinyl) coverings, self-drilling and tapping screws and glues. Typical joints are shown on the included drawings.

Interior and exterior butt joints between panels are made by using an extruded aluminum "U" shaped butt channel between panels, secured in place by using self-drilled and tapping screws. On the side of the joint where the screw heads extend, snap-on PVC (vinyl) coverings are used. The opposite side of the joint is flush, with a PVC (vinyl) snap-on section spanning the joint.

Interior and exterior corner joints are made by an aluminum corner channel secured in place with self-drilling and tapping screws and covered by a PVC (vinyl) snap-on covering. No covering section is needed on the opposite side. At exterior corners, the steel post will be framed by the panels on the outer edges.

Interior wall panels are connected to the floor and ceiling grid by "L" shaped extruded aluminum angle channels. The angle channel extends the entire length of all interior wall panels. One is screwed into the floor and one directly into the steel ceiling grid. The steel grid is pre-punched and the holes are filled with a screwable plastic button. Then the interior wall panel is positioned in place and screwed to the two angle channels, with screws every 12 inches on center. A PVC (vinyl) channel covering also runs the entire length of the panel, top and bottom. All screws are self-drilling and self-tapping and all vinyl coverings are snap-on mouldings. The steel is pre-punched for screws.

Exterior wall panels are screwed directly to the steel channel.

The roof and floor panels can be secured in place by

either: 1) self-drilling and self-tapping screws through the panels to the pre-punched steel frame or 2) adhesive bonding the panels directly to the steel frame. Obviously, the latter alternative eliminates the flexibility of the roof and floor panels once set. Also, an aluminum fascia is used around the exterior of the roof.

The false ceiling is attached to the steel spaceframe's upper "C" channel member.

In the included drawings, all panels and joints are rectangular. It is possible to fabricate odd shaped panels such that non-right angled joints are formed. In such a case, alternate shaped aluminum extrusions and vinyl moldings can be formed.

To remove an interior wall panel, for example, all one needs is a screwdriver. One simply unsnaps the plastic vinyl coverings, unscrews the screws which attach the wall panel to the butt joints and to the floor and ceiling angle channels. Then one slides the panel out of position and removes it. One then unscrews the lengths of angle channel, removes them and replaces the plastic buttons in the steel grids and fills the floor holes with a liquid plastic. There is no evidence remaining that a panel ever was positioned there. A 4 x 8 ft. panel weighs approximately 96 lbs. (about 3 lbs. per sq. ft.) and is easily handled by one man. A larger panel would require that the homeowner's son or neighbor help him. But either way, the Vari-Flex system component assembly subsystem allows for true and complete flexibility in panel arrangement.

Other elements of the component assembly subsystem include the previously discussed bolts for attaching spaceframes together, and the yet to be discussed bolts to attach to spaceframes to the foundation and the bolts and/or screws for the utility core or core panel subsystem.

### The Utility Cores and Core Panels Component System

The Vari-Flex system is designed to allow for the use of both or either of these subsystems. The utility core subsystem is a volumetric module which is bolted to the steel spaceframe. The utility core panel subsystem is a set of panels, which when bolted to the steel spaceframe and jointed together using the Vari-Flex component assembly subsystem previously mentioned, results in a volumetric utility core. The advantages and disadvantages of each subsystem have been well discussed. It is up to the producer to decide which, if not both, he will provide for use. But, the Vari-Flex system allows for the use either. For that matter, if it were decided not to use the pre-plumbed and pre-wired utility cores, the Vari-Flex system is equally adoptable to conventional bathrooms, kitchens, and mechanical utilities. The plumbing could be piped under the floor, either in the factory or on-site, since the floor panels are removable if screwed to the spaceframe. The advantage of the Vari-Flex system floor panel component subsystem over conventional housing flooring systems is that the Vari-Flex floor panels can be removed if necessary for future repairs or modifications of the plumbing.

The example floor plan on the drawings herein shows how to effectively use a pre-plumbed, pre-wired utility subsystem. The two bathrooms, one with the mechanical utilities, is a simple volumetric module attached into one of the 10 ft. wide spaceframes at the factory. The kitchen appliances are all attached to one utility core panel, 12 ft. long, which is attached to another spaceframe at the factory. These two spaceframes are then attached together at the site along the common utility wall. This allows for a single utility hook-up on-site. There are no other connections to be made for these subsystems.

# TYPICAL FLOOR PLAN

2 BEDROOM - 2 BATH

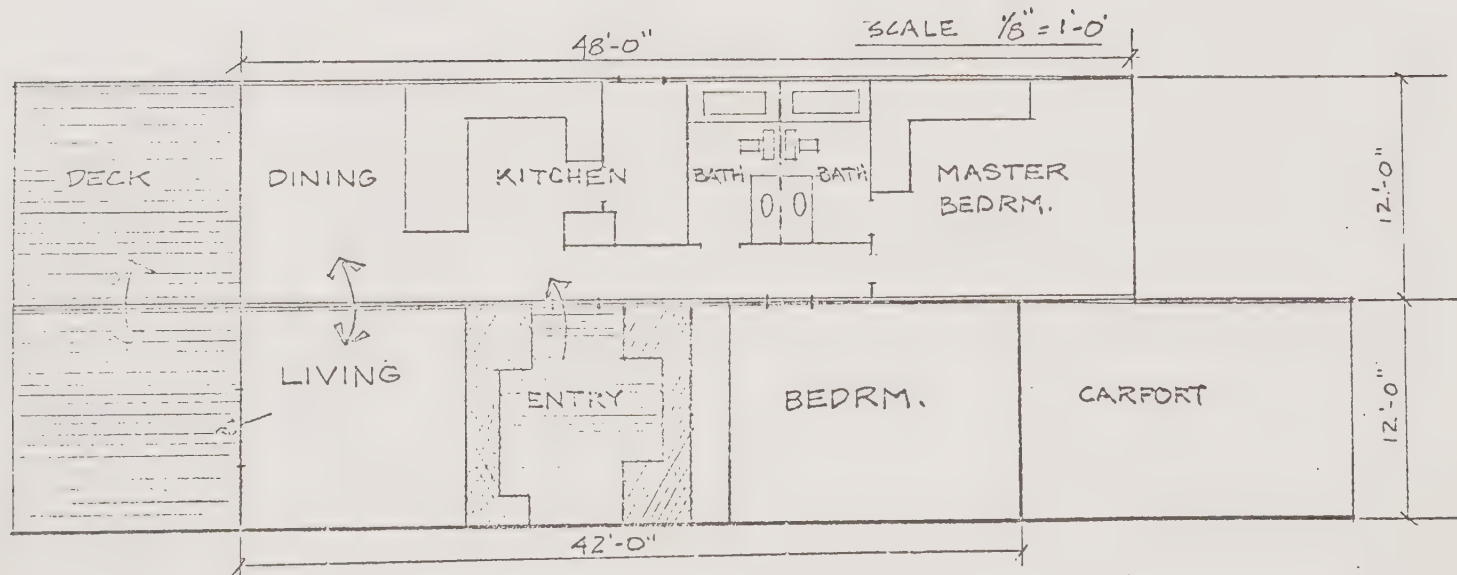


Figure III-10. TYPICAL FLOOR PLAN

### The Electrical Subsystem

The electrical conduit enters the dwelling unit from the single utility hook-up connection box. It is the channeled throughout the dwelling by being run through the upper "C" channels of the steel spaceframe. Where electrical outlets and switches are desired, the necessary wiring is brought down through the aluminum extrusion used as wall panel butt joints. Openings are then cut in the face of the extrusion and the necessary mechanical devices are attached and connected. In this fashion, there is no need for expensive raceways or to cut into the panels. It is economical, practical and efficient. Romex wire harness is recommended, but not required. Telephone and television cables may be attached in the same manner. The false ceiling subsystem allows for ceiling light fixtures.

### The HVAC Subsystem

The creators of the Vari-Flex system evaluated the many innovative heating and air conditioning subsystems and decided to eliminate the need for expensive ducts and plenums. It was decided to suggest the use of either electric base-board or electric panel, self-contained heating units. The factors considered in making this decision include:

- The lack of need of space for central equipment, chimneys, ducts, and fuel lines.
- The lack of pressure criticality.
- The fuel conversion efficiency.
- The savings in first-cost.
- The competitive cost for repair, operation and maintenance.
- The lack of geographic use limits.
- The extreme practicality of units that are failsafe, firesafe, healthful, clean, neat appearing and quiet.
- The advantages of room by room simple automatic controls.
- And above all, the extreme effectiveness of the system.

In areas where it is desirable to have air conditioning, individual room units can be used. If planned into the design of the dwelling initially, the wall panels can be produced with the necessary blockouts for the air conditioning units.

But since the Vari-Flex building system is flexible, it is also designed to be used efficiently and effectively with duct and/or plenum HVAC subsystems. The central equipment can be installed in the pre-plumbed and pre-wired utility core or core panel subsystems, and therefore, be connected in the single hook-up. The ducts can be run through the space between the false ceiling and roof. The false ceiling grid pattern allows for installation of the necessary grill openings. The crawl space under the floor can be used as a plenum. In this manner even a conventional HVAC subsystem can be used more efficiently than in traditionally constructed housing.

#### A Vari-Flex Component Building System Factory

The Vari-Flex system is designed to take advantage of the latest in industrialized building system methods. In general, it can produce more housing from less skilled - hence less scarce - labor, it drastically cuts the weather-vulnerable part of the construction process, it makes use of new and advanced materials, it is produced in a factory where machinery can be installed and it is standardized to the point where volume product is possible.

It is expected that the sandwich panel components can be produced using a continuous production process such as Kaiser Aluminum and Chemical's system. Such a process should allow the manufacture of 20 feet of sandwich panel per minute (8 and 10 feet wide). The utility core and core panel subsystems can be purchased from suppliers such as American Standard and Borg Warner. HVAC subsystems likewise can be purchased. The steel spaceframe false ceiling grid fabrica-

tion can be contracted out. Conventional standardized doors and windows can also be purchased. The bolts and screws are standard hardware items. The production of the aluminum joinning components and their snap-on vinyl plastic moldings can be contracted out also. Electrical supplies needed are standard items. In summary, the Vari-Flex "factory" is, in reality, an assembly plant for the different components and subsystems.

The extent of assembly of the housing units depends on several factors. The choice is between a panel/core system and a completed volumetric module. When to deliver the product as a panel/core system:

- When to be used in self-help programs.
- When site labor costs provide an economic advantage to do so.
- For competitive advantage.
- When demand doesn't justify "tooling up" for modular construction.
- For transportation reasons.
- When volumetric modules aren't recommended.
- Where codes and building inspection requires certain on-site work.
- When requested.

When to deliver the product as a volumetric module:

- When on-site work must be minimized.
- When time is of the essence.
- For competitive advantage.
- When factory built housing codes (California's) require.
- When economically advantageous.
- When panel/core site erection is recommended.
- When requested.

A computerized production system would prove to be very advantageous in a Vari-Flex system factory. For instance, for the sample single-family detached house shown on the

drawings that follow, the potential buyer could choose it out of a catalog. The plan could then be fed to a computer which would calculate the entire inventory of components and subsystems required. It would then follow through and program the panel-production machinery to produce the required 139 LF. of exterior 10 ft. wide panel with the desired surfaces, the required 2,118 SF. of desired roof panels and so on. It would then program the panel cutting machinery to cut the 139 LF. of exterior panels into exact length sections and similarly of other panel types. Once all the panels are produced and sized, and the required inventory gathered, the computer can then organize assembly and transportation similarly.

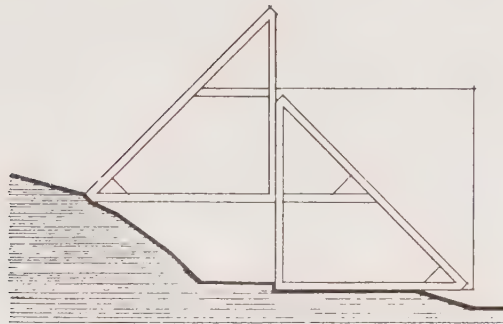
In conclusion, the exact size, manpower requirements, extent of industrialization and the like depends upon the decisions of the systems management. The Vari-Flex system allows for flexibility in production as well as in design and use. At the very minimum, the factory can produce panels and act as a warehouse for the rest of the components and subsystems. Or it can be a very advanced computer organized production and assembly plant.

#### On-site Work

The amount of on-site work depends upon 1) the type of housing to be erected (townhouse, high-rise, etc.), 2) the state of assembly of the prefabricated units (panel/core or volumetric module), 3) consumer demands and 4) legal requirements.

For the house shown on the drawings, the on-site work included lifting the 6 volumetric modules off the trucks by crane and setting and bolting them on the 16 precasted concrete piles (one under each post of the spaceframes). Previous to the arrival of the modules, the site was surveyed, appropriately grubbed, cleared and graded, and the piles were set in driven holes (with paste on the bottom

## SINGLE FAMILY DETACHED UNITS



section

floor plans

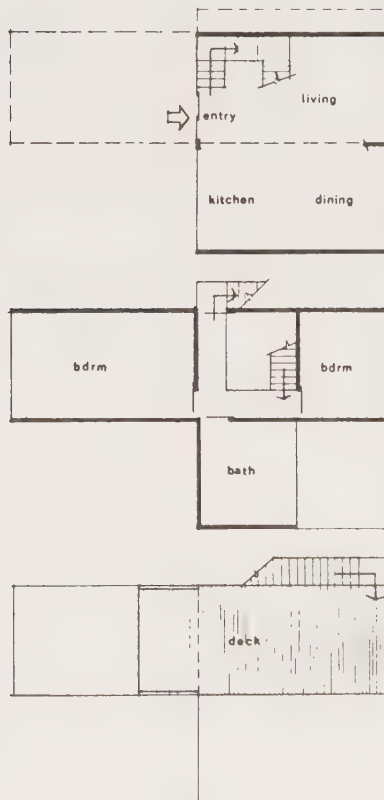


Figure III-11. SINGLE FAMILY DETACHED UNITS

for structural continuity). The utilities were installed. A concrete driveway, two terrace units and sidewalks were poured from a redi-mix concrete truck. After the modules were bolted down and the single simple utility hook-up completed, the house was inspected and then the residents moved in. It took, theoretically, about 50 man-hours to complete. Had it arrived as a panel/core unit, it probably would have taken 50 extra man-hours to erect.

Since each Vari-Flex module is structurally independent of the site, any type of foundation can be used, from a poured basement to a concrete slab, to a set of piles. From an economic, as well as a structural point of view, drilled in concrete piles, with diameters to suit load and soil conditions, or steel frame foundations for steep sites, are optimal. A typical Vari-Flex system single-family detached house is light, approximately 35 lbs. per sq. ft. and therefore requires the minimum of foundation support. It is resistant to differential settlement, thus, continuous footings are unnecessary. With a pile support foundation, the system may adapt itself to most topography with a minimum of grading.

### Economic Analysis

First Cost Estimate - The following first costs are based upon published figures and estimated figures. The total cost in each category has been rounded upward so as to result in a conservative final cost. Cost estimates do not include the cost of financing nor the cost of developed land. Costs do include all overheads and profits. The costs presume production of approximately 432,000 SF. of housing per year (1,000 36 x 12 ft. volumetric modules) over a minimum of five years beginning in the Fall of 1970. A well mechanized production plant is assumed. The costs are in terms of today's (Summer 1970) dollars for product in the Winter of 1970-71. Finally, the costs are based on a 3-bedroom, 2-bath

"California modern", erected as 6 volumetric modules.

Table III-24  
COST OF MATERIAL FOR AND PRODUCTION  
OF VARI-FLEX COMPONENT PANELS

<u>Item</u>	<u>Dollars Per Lineal Foot of 10 ft Wide</u>	<u>Dollars Per Lineal Foot of 8 ft Wide</u>
Int. Surface	2.50	2.00
Ext. Surface	2.70	2.00
Polyurethane Foam or Egg Crate	1.50	1.25
Pro-Rated Steel Spaceframe	1.15	0.75
Pro-Rated Assembly Components	0.50	0.40
Labor	0.85	0.80
Overhead	0.80	0.80
Total	\$10.00	\$8.00
Per Sq. Ft.	\$ 1.00	\$1.00

Other Panel Components

Window Panels (incl. window):	\$9.00/LF	
Door Panels (incl. door ):		
Exterior:	\$7.00/LF	.
Interior:	\$6.00/LF	

On-Site Work

Foundation	\$ 8.00
Utility Hook-up	\$250.00
Concrete Sidewalks Drive and 2 Terraces	
Erection	500.00
Other	100.00
Total	1,900.00
Per Sq. Ft.	1.00

Note: Add for basement option (including outside entrance):  
\$4,000 or about \$2.00/sq. ft.

#### Other Panel Components

Window Panels (including window):	\$9.00/LF
Door Panels (including door):	
Exterior:	\$7.00/LF
Interior:	\$6.00/LF

#### On-Site Work

Foundation	\$ 800.00
Utility Hook-up	250.00
Concrete Sidewalks Drive and 2 Terraces	
Erection	500.00
Other	100.00
Total	1,900.00
Per Sq. Ft.	1.00

Note: Add for basement option (including outside entrance):  
\$4,000 or about \$2.00/SF

#### Estimated Cost For Example House

<u>Item</u>	<u>Quantity</u>	<u>Unit Price</u>	<u>Total</u>
Int. Wall Panels	129/LF	\$10/LF	\$1,290
Ext. Wall Panels	139/LF	\$10/LF	\$1,390
Window Panels	48/LF	\$ 9/LF	\$ 432
Door Panels			
Int.	56/LF	\$ 6/LF	\$ 336
Ext.	9/LF	\$ 7/LF	\$ 63
Roof Panels	2,118/SF	\$ 1/SF	\$2,118
Floor Panels	1,902/SF	\$ 1/SF	\$1,902
Utility Core	1	each	\$3,000
Utility Core Panels	1	each	\$2,600

# Estimated Cost For Example House (cont.)

<u>Item</u>	<u>Quantity</u>	<u>Unit Price</u>	<u>Total</u>
Stiffeners	300/LF	0.10/LF	\$ 30
False Ceil- ing	1	each	\$ 500
Heating Units	10	\$40/each	\$ 400
Electrical System	1	each	\$ 500
Transporta- tion	6-40 mi.	\$0.75/each/mi.	\$ 180
On-Site	1,902/SF	\$1.00/SF	\$ 1,902
Subtotal			\$16,643
Overhead and contingency and management			\$ 500
Profit			\$ 1,000
Total			\$18,143
Per Sq. Ft.			\$ 9.45

It is therefore possible to abstract from this, that the cost per sq. ft. varies between \$9.00 and \$10.00, depending on the type of unit (except high-rise which would be more), size of unit and other individual considerations. A similar house traditionally built would probably run close to \$12.50/SF., even if rationalized methods are used. This represents a savings of about 24 percent.

#### Total Cost

Beside meeting the objective of lower first-cost, the construction realizes the factors of maintenance, renewal, rehabilitation, operation, and flexibility. Maintenance costs will be low because of the high quality, precision, construction, moisture control and low-maintenance materials used. Operating costs will be low because of the superior insulation. Insurance costs should be lower also.

#### Conclusion

The Vari-Flex system is a component building system that provides a full range of housing from single-family detached houses to high-rise apartments at lower cost.

It is a structural system that utilizes existing technology and can be initiated within present-day construction practices. It is an industrialized housing building system.

It is a system of housing that incorporates innovation; that can be easily modified to accommodate the changing needs of the household; that may be economically maintained in like-new condition; and that offers options of ownership, responsibility and self-respect to all economic and social classes.

#### Typical Assembly

The dwelling configuration and style, as shown here, are used as examples only, to describe the Vari-Flex system; and are not to be taken as ideal or perfect or as representative of system limitations.

### 3. Utility Cores And Panels

The principal here is to concentrate on the industrialization of a preassembled core in which those elements of the dwelling which would benefit most from factory mass production are housed. Essentially, these include the bathroom(s) and kitchen equipment, as well as the heating, cooling, and air conditioning units. These are the elements which would require a large number of high-skilled man-hours for on-site labor and which could be produced and assembled more efficiently in the factory.

Of course, anything which completely restricts either choice or change is soon outdated and substandard. And, neither the bathroom or kitchen are standard items with appliances and amenities in choice of shape, size, style, finish and color. Thus, one begins to realize, while coping with the average of two bathrooms, a laundry and a kitchen in every unit that the typical "drop-in" type core concept is already substandard for all but the lowest costing units. But even when working with the elements of a bathroom, expensive as they are and comparatively restricted as is the space, the question as to whether it is efficient to ship the whole space as a unit is not easy to answer affirmatively. Not if you can produce it in three or four sections which nest, and can be carried through a 2 ft. - 6 inch door and be put together in half-an-hour by two low-skilled men with a wrench and a screwdriver and further if these 3 or 4 standard elements can be combined in 10 different ways - and in 100 different - size spaces with various standard or custom added amenities.

This evaluation deserves serious consideration. Many manufacturing firms are now developing or producing volumetric, modular utility cores. What is suggested here is that they also produce prefabricated utility-core panels. Another consideration is that it is quite likely that the economic break-even volumes of the separate core components will not

coincide with one another and based on past experience, will probably be larger than the initial market for the cores. Therefore, if the operation is to be most effective, the components should be separately marketable. This too, then, argues against complete standardization of the whole set of fixtures, at least in the case of most appliances and amenities.

And a word (or two) about the functionality of the traditional bathroom seems appropriate here. Stripped of its gadgets and decorator colors, the typical bathroom is about the same kind of place it was in 1935. It is just beginning to undergo the revolution that finally overtook the small, ill-designed kitchens of the same era.

Most fixtures are dirt collectors and have little relationship to the size and shape of the people who use them. The worst designed fixture of all - and traditionally the least talked about - is the toilet. There is almost universal agreement among physiologists and human engineers that the typical toilet actually interferes with the bodily functions it is intended to serve. Not enough attention has been devoted to overall bathroom planning.

Recently, and in direct result of an exhaustive study published in 1966 by Professor Alexander Kira of Cornell University simply called "The Bathroom", many innovations and much innovative thinking has occurred. But how much better our bathrooms get and how fast depends heavily on changes in and encouragement from, the housing industry.

#### 4. The Factory

Introduction - Up until Operation BREAKTHROUGH there were two types of housing production factories - the one that produced mobile homes and the one that produced in a factory only that which could be traditionally "stick-built" in the field. These types, as previously discussed, were quite similar. Their two great advantages are: 1) well-con-

trolled labor indoors at lower cost and 2) production line quality and quantity.

With BREAKTHROUGH, the logic of doing the job the same old way under cover and then paying to have it transported was challenged by the new systems which take proper advantage of the production line techniques. Such advantages include controlled production flow; the use of automated equipment; electric and pneumatic, as well as hydraulic, fixtures and jigs; continuous production under a factory roof with no weather delays; mass buying capabilities; increased quality control and lower labor rates.

In the present and near future, then, new factories are required to achieve the cost reduction goals established and to operate at the scale necessary. These new facilities, tailored to the production of BREAKTHROUGH - type advanced systems, will have a higher degree of automation and more sophisticated management information systems than present facilities. The extent to which advanced concepts are used will depend upon the design capacity of the factory; the larger the factory, the greater the investment which can be justified in equipment and software.

#### Operations

All factories should be served by a procurement organization and by a collection of specialized component fabricating facilities. Every required item should be studied to see whether it should be purchased, fabricated or produced in a specialized facility. This is only one example of the many optimization procedures necessary for efficient production. In some instances, major suppliers may wish to co-locate their own production facilities with major housing production factories.

To minimize the start-up time and capital requirements for new plants, a larger number of items should be purchased. Responsibility for the production of these items should then

be brought into the factory gradually.

#### Future

Various alternatives to fixed location factories are being evaluated due to the resulting design limitations imposed by highway transportation regulations. For example, the possibility of utilizing fixed major fabricating centers to assemble large basic components and portable final assembly facilities on-site to complete the dwellings should be considered where sufficiently large scale projects are involved. An air supported temporary building or a plastic-shell type structure are possible on-site production facility enclosures.

#### Comparisons

Comparisons of like housing factories is nearly impossible due to the fact that no two factories are alike, as of yet. The housing production factory concepts includes the barest of concrete casting yards for concrete panels and volumetric modules and the most lavish of automated, high production facilities; and all plants in between.

#### Role of Labor Unions

Past union opposition to prefabricated housing has been well documented as a major constraint of their success. Union influence in blocking the use of prefabricated housing has been localized in nature and generally has included control through local building codes. But recent union agreements with existing factories show a reversal of union attitudes. This trend should continue as economic and political pressures for industrialized housing systems increases, though some unions will likely make a "last ditch stand." This real test should come when producers attempt to locate large numbers of their dwellings in urban and suburban areas where unions are usually well entrenched. It should also be noted that union made dwellings are not assured of acceptance by

all local trade unions. Several instances of the refusal to complete the on-site connections on union shop fabricated dwellings have occurred. In summary, while most factories have and will probably continue to experience some form of difficulty with unions, they are not held to be a major problem.

A majority of existing factories are operated with union organized labor. A majority of the organized plants are represented by the carpenters and joiners union (AFL-CIO), while a significant number have agreements with the American Labor Alliance (ALA) of the United Auto Workers (UAW) and Teamsters. Some ALA organized factories have run into problems gaining acceptance of their products by AFL-CIO construction trade unions.

#### Wages

Union wages for the semi-skilled tasks involved in the manufacture of dwellings are generally considerably less than on-site construction wages. The wage rates (1969) for the semi-skilled prefabricated housing factory employee typically range between \$3.00 and \$3.50 per hour. This is contrasted to the \$5.71/hour average wage rate (no fringe benefits - 1969) for all union trades working on traditional on-site construction projects. In some areas of the country, the non-union plants are paying as low as \$2.25 per hour to factory employees. In those locations, however, there is often a high percentage of non-union, on-site labor with wages of \$3.50 to \$4.00 per hour. Thus, the cost differential for labor remains about the same. It has been the accepted practice to employ master craftsmen as factory supervisors and pay them full site wages. Additionally, crews sent into the field to complete the units at the site usually receive regular site wages.

A San Francisco Bay Area producer projects wages of \$3.25 to \$4.50 per hour for his sheet metal union organized

industrialized housing system factory.

### Transportation

Typically volumetric moduels are transported from the factory to the site by trucks on mobile home type trailers or flat bed rigs. Component systems typically rely on flat bed rigs.. While most existing producers own and operate the necessary tractor and trailer equipment, some contract with mobile home movers or others for the service. Owning and operating the tractors and hiring drivers directly could save up to 40 percent in time, but the acquisition of such equipment is a major expense. A factory producing 25,000 modules a year would probably need near \$1 million in this type of equipment.

In order to maintain a cost competitive position, most firms presently do not attempt to profit from their transportation service, through this is changing. The exact costs of transportation cannot be determined unless factory, site locations and routes are known. The typical rate per truck shown below include the usual cost of permits, but not tolls and flag car costs. The later two costs may not be incurred on many routes. As a guide, flag car costs are roughly 25 cents per mile. The usual billing rate is 75 cents per mile per truck, covering all operating costs. Thus, to transport a two-section volumetric module 25 miles to the site shipping costs from the factory would be \$1.50 per mile for 50 miles, or \$75.

Most volumetric module producers estimate a 300 mile maximum marketing area around their factory, based on truck transportation economics. Component system producers, who do not transport the volumetric air space that module producers must and, thus, can transport more housing per truck, range up to 1,000 miles in their estimates of economically feasible truck transportation distances.

Other alternatives to truck transportation include rail,

barge and helicopter. Helicopters are currently being used for a number of construction services. Ten ton loads can be carried at present, with twice the capacity anticipated in the next decade (Uniment 11 x 36 ft. module: 11 1/2 tons, typical wood frame 12 x 40 ft. module: 12 tons). The operation is economically sound in comparison with surface-based cranes, but when construction is required in remote or inaccessible area, helicopters offer great savings.

### Erection

#### Site Work

Much of the success of an industrialized housing system development is dependent upon keeping the costs of site improvements to a minimum. The coordination and absolute minimization of on-site trades is a very important area. The foundation system must be complete before the erection of the housing unit. Once the units are in place, it should be possible for the remaining connections to be made by a semi-skilled handyman type. With this objective in mind, a number of possibilities are available. For example, in a multi-sectional volumetric module, all the plumbing should be kept in one module. All lights in a module should be switched from that same module and not from across the module mating line. This greatly reduces the number of cross-over connections necessary after the modules are connected. These connections would be simplified still further if they are made around the ceiling rather than from the craw space beneath the unit. Air conditioning/heating connections should be done the same way. By placing the thermostat in the same module as the heating/air conditioning unit, still another cross-over connection is eliminated. Whenever possible, crawling beneath these units in order to make connections should be eliminated.

#### Erection Rate

Erection rates vary with the building system, with the

size and skill of the crew and with the site conditions. Generally, volumetric modules take fewer man-hours than do component or panel systems. For example, Technology Consortium Inc. of Berkeley California sites in its brochure for its utility core/panel system that it takes 144 untrained man-hours to erect a 4 unit garden apartment. Modular Housing Systems, Inc. of Northumberland, Pennsylvania sites that with one crane, its trained crews of 6 men can set about 24 modules (18 to 32 x 12 x 8 ft. wide) in place a day. It takes 6 modules stacked two-stories high, to form a completed townhouse. Finishing takes another four days. Thus, if four townhouses are delivered Monday morning, they would be ready for occupancy by Friday night. Each townhouse, therefore, needs 60 man-hours of on-site work. This compares favorably with the 2,500 site man-hours needed to construct an average 1,000 sq. ft. house traditionally. The same size house constructed with one of BREAKTHROUGH's panel and utility core systems (requests anonymously) would require 50 to 100 site man-hours, depending on the site and the crew. In conclusion, it is obvious that savings on site of about 2,400 man-hours per 1,000 sq. ft. of housing is practical.

### First Cost Comparisons

#### Introduction

Statistics, Mark Twain pointed out years ago, can be used to prove anything. Just get up your own set to prove what you want. Reams of cost-data statistics have been published showing comparative housing costs. Most are published by, or in cooperation with, those with vested interests in one phase of housing or another. It is really insane to present them here and say that they are accurate. Yet, what is an evaluation of housing systems without an evaluation of their costs? The costs presented in previous sections were, for the most part, based on actual developments. Those differ from comparison costs since the latter must be standar-

Table III-25

COST COMPARISON ON RATIONALIZED ON-SITE BUILDING  
AND MOBILE HOMES

Rationalized On-Site Building	Mobile Home (24 x 56 Furnished)
\$12,270	\$8,490
\$ 9.50	6.32
-	1,080
-	(skirt and awnings)
-	500
1,000	600 (taxes)
1,730	230
6,000	(license 1st year)
1,000	- (4)
2,000	-
<u>\$24,000</u>	<u>2,000</u>
1,500	-
<u>\$25,500</u>	<u>\$12,900</u>
\$ 19.77	9.60

## Notes:

- (1) On-Site Includes:
- Utility Laterals
  - Driveways & Walks
  - Concrete Block Foundation
  - Screwjacks
  - Garage Slab
- (2) Sales Includes:
- Commission
  - Escrow
  - Advertising
  - Model Expenses
- (3) Finance Includes:
- Interim Loan Fee and
  - Interest using 1 year to complete sales
  - FHA Processing Fee

(4) Yearly land-use rent not a first cost.

First Costs and Prices

Construction Costs per Sq. Ft.

On-Site (1)

Delivery

Set-up

Sales Expenses (2)

Construction Finances (3)

Lot (6,000/SF) Typical

Builders Overhead

Builders Profit

Sub-total

FHA Discount (6 pts)

Sale Price per Sq. Ft.

<u>Prefabricated Volumetric Module</u>	<u>Materials Systems' All Fiber-Resin</u>	<u>Prefabricated Woodframe Panel/Core</u>
\$9,670	\$10,700	\$10,900
\$1,880	-	-
\$ 350	-	-
\$ 300	-	-
\$1,000	\$ 1,000	\$ 1,000
\$ 900	\$ 900	\$ 900
(lot only)	(lot only)	(lot only)
\$6,000	\$ 6,000	\$ 6,000
\$ 750	\$ 750	\$ 800
<u>\$2,000</u>	<u>\$ 2,000</u>	<u>\$ 2,000</u>
\$22,850	\$21,350	\$21,600
<u>\$ 1,400</u>	<u>\$ 1,300</u>	<u>\$ 1,350</u>
\$24,250	\$22,650	\$22,950
\$ 18.80	\$ 17.56	\$ 17.79

dized for a particular unit type and size.

#### Method Cost Comparisons

Perhaps the most complete and up-to-date comparison of this type was presented in February 1970 by Robert Kreis, Vice-President, U.S. Financial, San Diego, California. He presented some detailed costs of several building systems and how much it costs the individual who needs the shelter.

For purposes of comparison, he standardized a 1,290 sq. ft. single-family detached dwelling unit with 3-bedrooms, 2-baths and an appearance of a California contemporary rectangle.

#### Analysis

Module - The factory built prefabricated volumetric module has 2 major and 2 minor savings over traditional cost:

- 1) A 10 percent boost in labor efficiency plus a 50 percent decrease in the labor cost yields a saving over traditional construction's total of 11.4 percent and
- 2) Because construction, delivery and set-up time is approximately 30 days from receipt of order there is no need for interim financing except on the lot. The minor savings are in the use of less costly, but still traditional, materials and lesser overhead because it is assumed that the local builder buys from only one supplier - the factory (plus 2 or 3 on-site trades) and supervision is shorter.

#### All Fiber-Resin

Being an example of the best that the industrialized housing system's industry has to offer, this system has the most promise of cost reductions. These can be cited as:

- Lower factory labor
- Low cost basic material
- Ease of transportation as panels are stacked on a truck and erected on site.
- Savings in transportation as the cost of bringing raw materials to the factory is quite low and the

light weight of the finished product reduces trucking costs.

- No need for interim financing, except on the lot, because delivery and set-up can be done in less than 30 days.
- Lower builder's overhead because of fewer suppliers and erection time.

#### Panel/Core

The wood framed panels and utility core house is a good competitor but it lacks the design flexibility and innovations of the fiber-resin house. Material costs are greater. Transportation costs are slightly higher since finished products (wood studs, gypsum board, etc.) are being shipped to the factories and then again to the site. A few more suppliers are involved, thus a larger overhead allowance.

#### Traditional

Even the rationalized on-site building methods represented here can't compare in cost to prefabricated units. True the difference is only 10 percent, as compared to the fiber-resin. Traditional costs are rising, industrialized housing systems costs decreasing.

#### Mobile Home

The mobile home has been discussed earlier. Obviously, it is the only type of unit where there is a significant first cost differential. But, not to be misleading, it should be noted that present day economics dictates to the mobile home buyer a depreciation factor of 80 percent in 10 years. Usually, a suburban home will reach its maximum appreciation in the same 10 years. Thus, the total cost over the units' life is comparable to the other systems.

#### Conclusion

As this cost comparison shows, some in-roads have been made in lowering housing costs. Estimated savings are running about 10 to 15 percent below rationalized traditionally built houses. These lower costs come from the savings in

production time, materials, labor and interest. As for the future, what industrialized housing will do for costs is anybody's guess. The trends are set, but the degrees are not. All that seems certain is that today, there are methods of construction that result in lower first costs than rationalized traditional building methods. These same systems also result in lower total costs over time.

#### 5. Use of the Computer in Industrialized Housing

The possible uses of computers in the industrialized housing systems industry are many in number and run the gamut from typical to visionary. As envisioned by Stanford University's Artificial Intelligence Project members, a client and a professional designer sit at the computer console. They determine the initial specifications and cost of the projected unit (s). Then by interacting with a housing unit drawing program, which allows the use of pre-programmed housing systems as well as freehand modifications and additions, the designer and client prepare and alter the dwelling plans. At any point the computer can provide cost and feasibility estimates, perspective drawings, structural plans and other implications of the developing design. When all the demands of feasibility, cost and client satisfaction are met, the computer prepares a materials list and a detailed plan of construction and production including acquisition and transportation of materials, optimized order of assembly, land preparation and so forth.

More conventionally, it can do cost accounting and cost analysis, production scheduling, inventory management, and other "package programs."

#### 6. Self-Help Program

By the term "self-help housing" is meant specific industrialized housing systems composed of factory produced components that may be assembled and erected on-site by community service groups, ghetto entrepreneurs, private individuals

or commercial construction concerns using low-skill labor. Its essential features are community orientation and low-skill level. It differs from owner-building in its use of essentially untrained labor. Self-help has certain clear limits, however, since it excludes people who are physically or emotionally unable to perform work as a member of a supervised team.

The low-skill level necessitates the development of the most efficient component parts and housing sub-systems to produce structurally sound housing units. Housing built to self-help criteria must be built of easily assembled, disassembled and erected components. This ease of assembly and disassembly also provides the means to economically rehabilitate and modernize housing through replacement of components.

Self-help or community groups that are directed to long term community values provide a continuity of ownership and a continuing management interest in the housing unit. On the other hand, by participating in the building of their own housing unit, individual participants acquire a pride in the unit, a substantial "sweet" equity and a new set of skills. These skills can be used again either as hired labor, opportunities, or for typical homeowner repairs and upkeep, which would otherwise either not get done or be done for a fee.

The Office of Economic Opportunity has been practicing bringing families of low incomes without decent housing together in a self-help project. A current program involves Boise Cascade Corporation, through its Kingsberry Homes division, in the production of about 200 units of housing for rural families. A presentation is made by the Kingsberry representative, the families are divided into groups of 8 to 10 families, each group is assisted in forming a residents association and each member signs a promissary note to back his commitment. The association is then trained to

carry out the actual site work.

One very real example of what can be done exists in Watts today. On 117th Street, workmen have been busy "planting" houses wheeled from the airport 7 miles away, to be given to local residents displaced by a freeway coming through Watts. The relocation of the homes - eventually 900 of them - was worked out in a deal between the State of California and the Greater Watts Development Corporation, one of four Watts Labor Citizens Action Committee (WLCAC) subsidiaries. The WLCAC is one of the most impressive self-help operations in America's ghettos, along with Operation Breadbasket in Chicago, OIC in Philadelphia, and the nationwide Self-Help, Inc.

As contractors, Greater Watts Development insisted on hiring black union labor; which means that formerly unemployed or underemployed men are now making \$4.99 an hour, easily double the salary they ever enjoyed.

In summary, self-help housing uses manufactured components to apply the advantages and economics of mass production directly to the needs of the people. In addition to obtaining suitable housing at a cost they can afford, the self-help occupants also experience the pride and satisfaction of "doing for themselves" and achieve a sense of community responsibility so long denied them.

## E. TRANSPORTATION

Recommendations - The previous discussion of transportation centered around present systems, and described improvements planned or contemplated. In this section of the report, recommendations are made on present issues in the area of commutation, where most of the study work has already been done by the appropriate local, regional, and state agencies. Following the discussion, a series of systems proposals will be made for the downtown area, and for intra-district travel.

### 1. Regional Commuter Considerations

Table III-26 is a commuter matrix showing the pattern of commutation which Stanford Research Institute (SRI) expects to develop in the Bay Area over the next twenty years. In sum, commuters into San Francisco will double by 1990, with Marin and Contra Costa counties showing the largest gains. BART is expected to increase the amount of "reverse commuting" from San Francisco to Alameda, although net reverse commuting will show only relatively modest gains, as San Francisco's population remains stable (and employment apparently decreases).

The issues discussed in the next few paragraphs are dealt with only briefly here, by way of introduction; the reader desiring more detailed arguments, and statistics, is invited to read the appropriate works mentioned in the Bibliography, or peruse his daily San Francisco Chronicle.

#### a. Extension of BART Down the Peninsula

The freeways down the Peninsula are presently quite full, and yet expected to absorb still further demand increases. The Bay Front freeway, which might have increased capacity by 50% by 1990 or 2000, will not be built. Southern Pacific shows no desire to stimulate demand for their services, and Greyhound wants out. Clearly, there is

Table III-26

## GROSS COMMUTE MATRIX

1965 - 1975 - 1990

(Thousands)

<u>County</u>	<u>Into San Francisco</u> <sup>1</sup>			<u>Out of San Francisco</u> <sup>2</sup>		
	<u>1965</u>	<u>1975</u>	<u>1990</u>	<u>1965</u>	<u>1975</u>	<u>1990</u>
Alameda	44.0	55.5	84.7	11.1	14.4	19.4
Contra Costa	21.1	34.2	69.4	1.7	2.3	3.7
Marin	27.2	43.7	81.5	2.3	2.7	3.0
San Mateo	75.7	93.6	116.8	19.5	24.5	25.7
Santa Clara	13.3	25.8	28.9	1.4	2.3	3.0
Other	6.3	11.9	19.9	6.8	2.0	1.5
Sub Total	187.4	264.7	401.2	42.8	48.2	56.3
San Francisco	293.9	286.8	283.7	293.9	286.8	283.7
Total	481.3	551.5	684.9	336.7	335.0	340.0

Totals may not add due to rounding

- Notes: 1) Numbers in this column indicate the residence location of those working in San Francisco; the "in commute".
- 2) Numbers in this column indicate the employment location of those living in San Francisco; the "reverse commute".

Sources: 1965: Home Interviews by Bay Area Transportation Study Commission

1975, 1990: Forecasts by SRI in WBRTA report.

a requirement for a mass transit system.

To begin, BART can be extended from Daly City to San Francisco International Airport with a minimum of difficulty (and \$120 million) by 1975, and should be; indeed, detailed planning is now getting underway.

Further extension, however, is more debatable. First, if it is to be extended along the Southern Pacific right-of-way -- the most logical location -- it would have to go all the way to San Jose, in order for Southern Pacific to permit it. Secondly, the West Bay Rapid Transit Authority showed that costs, for San Mateo residents, would outweigh benefits, which would further alienate an electorate which voted against a favorable plan in 1969. On the other hand, original traffic studies showed Palo Alto demand to be greater than Fremont demand, and yet the Fremont link is being constructed. Indeed, the demand from Palo Alto is expected to increase as the area develops. Also, the freeways will be unable to handle any more commuter traffic into San Francisco -- the same route any bus service would have to take.

The recommendation, then, is to link Daly City and the airport by BART as soon as possible; to implement improved bus service, perhaps publicly operated; and to adopt a master plan calling for the eventual extension of BART to San Jose (much as WBRTA recommended). The difficulty in implementation lies with the San Mateo voters, and indeed all voters who are tired of expensive bond issues. In the final analysis, implementation of extension from the airport to San Jose depends on two factors: 1) public acceptance of BART; and 2) effectiveness of future regional government agencies.

b. Rapid Transit to Marin

Commuter demand to Marin will more than double over the next twenty years. Bus and ferry service will

attempt to fulfill this increase, but by 1985 there will be a need for some form of rapid transit. Kaiser Engineers are doing a study of the problem, and has narrowed down the alternatives to three:

- 1) Automated vehicles (busses, trains) operating on exclusive right-of-way in Marin (old Northwest Pacific tracks), crossing via second deck on the Golden Gate Bridge, and connecting to downtown San Francisco via Geary Street underground.
- 2) The same, except crossing by an underwater tube from Sausalito to San Francisco, connecting with a subway under Columbus Avenue to downtown.
- 3) Rapid Transit buses on exclusive right of way in Marin (Northwest Pacific), crossing by second deck, and operating in subway in San Francisco.

A major question to be answered concerns the structural ability of the Golden Gate Bridge to sustain a second deck. An early study said it was infeasible, leading to Marin's withdrawal from BART; a 1968 study said it was feasible, and give a \$50 million cost for a second deck handling automotive and bus traffic. If feasible, this seems like the best method, since BART's consultants in 1969 estimated the cost of a subaqueous tube from Marin to San Francisco at almost \$500 million.

The recommendation, then, is for the construction of a second deck on the Golden Gate Bridge by 1980. While work proceeds on a rapid transit link in Marin, and on a Geary Street underground, busses can use the second deck; by 1985, when the rapid transit work should be finished, (if not sooner), the second deck can switch over to that mode. Note: if such a "dual mode" deck would be too heavy, then the interim bus service should be dispensed with, and the rapid transit work in San Francisco and Marin hastened.

At the present time, cost estimates are unavailable; not including the Geary Street line, and depending on the extent of the system in Marin, \$400 million does not seem unreasonable.

c. Indefinitely Delay the Southern Crossing

The southern crossing of San Francisco Bay has been a subject of debate and dispute since 1941. Early studies disagreed as to the optimal location of the bridge, advocating dozens of proposals ranging from another span parallel to a new location a few miles from the San Mateo Bridge. Legislation in 1953 authorized construction of the bridge at a certain location, later abandoned because it could not satisfy requirements of financial feasibility. Further studies finally resulted in the adoption, in 1966, of the India Basin-Alameda alignment, which is basically the present proposal of the State Department of Public Works (See Fig. III-12).

At the present time (June, 1970), legislation is pending to delay the beginning of construction on the \$300 million plus project scheduled for 1971. The San Francisco Planning and Urban Renewal Association (SPUR) wishes it delayed until a regional body can chart a master plan for the area's future; if such a body finds it "compatible", however, SPUR urges the bridge be built -- and suggests that 1975 should be the cut-off point for awaiting such a regional plan (if there is no plan by then, they suggest, build the bridge). Conservationists are against the bridge for environmental reasons, and rapid transit enthusiasts point out that BART could be extended from Fremont to San Jose, and part way north from San Jose, with the same money. On the other side of the coin, Governor Reagan, the Department of Public Works, and the highway lobby are pushing for an early start.

The recommendation is to delay construction on the bridge until an evaluation of BART's actual (not planned) impact

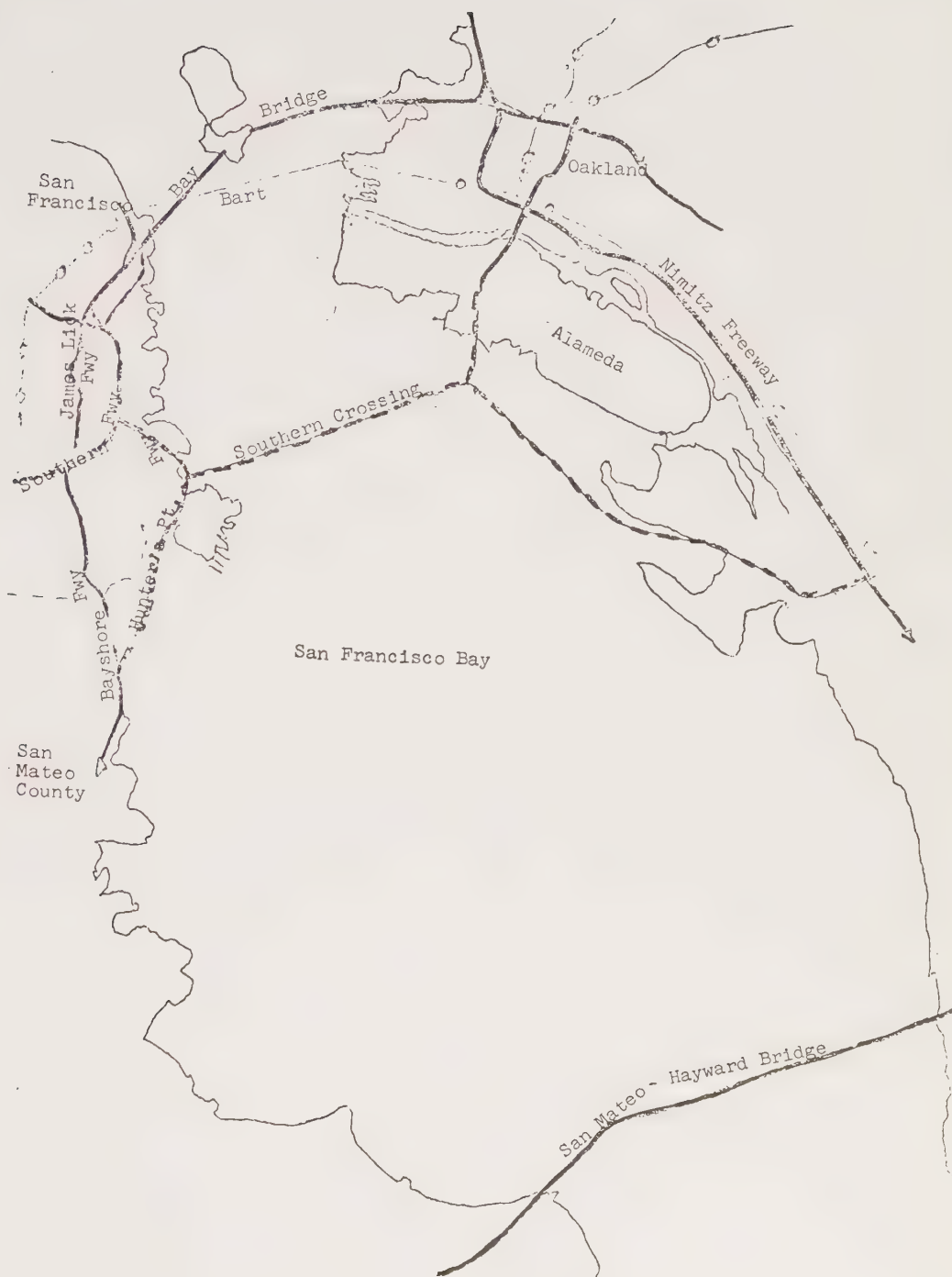


Figure III-12. INDIA BASIN-ALAMEDA ALIGNMENT

can be made. Further, some consideration should be given to a route connecting Bay Farm Island with San Mateo just north of the San Francisco Airport; the present route alignment serves San Francisco -- which will not generate appreciably more trips in 1990 than it does now, according to Wilbur Smith and Associates -- and Bay Farm Island (read Oakland Airport). On the other hand, explosive population and trip generation growth is expected in San Mateo and southern Alameda County.

d. Increase the Cost of Automobile Commutation to San Francisco

At the present time, the automobile commuter is favored by the toll structure; first, as discussed earlier, extra lanes are built just for him; secondly, he is able to purchase and use "commuter books" which enable him to pay a lower toll. At the same time, commuters clog San Francisco's streets and add harmful pollutants to the air, and rapid transit projects are unable to proceed because of a lack of funds.

In January, 1970, an Oakland representative to the State Legislature, Lewis Sherman (Rep.), introduced legislation to double the Bay Bridge toll level and use some of the additional monies collected to aid BART. Governor Reagan, from highway-crazy Southern California, immediately came out against the idea (the Governor has also opposed the use of gasoline taxes for rapid transit).

Nevertheless, it is the American tradition to use pricing to control demand when the supply is insufficient; in this case, the demand for freeways outstrips the supply, and so the "price" should be raised. There are several alternative methods:

- 1) Raise bridge tolls, and introduce road tolls (Bayshore).
- 2) Impose taxes on commuters parking in downtown San Francisco.
- 3) Raise the gasoline tax.

The purpose of such measures would be two-fold; 1) to discourage automobile commuting; and 2) to supply funds for rapid transit projects, and bus subsidies.

The recommendation is for the introduction of a variable toll structure on the Golden Gate and Bay Bridge. This concept involves charging different tolls depending on the time of day and direction of travel. Such a measure would charge more for peak use and probably have the effect of "flattening the peak", as discussed earlier, and thus raising a bridge's effective capacity.

An independent but related recommendation is for the introduction of automated toll collection. This would help avoid inevitable disagreements about the time of day, and would speed traffic at the toll plazas. However, it might also be expensive, and hence would be limited to commuter use. A full discussion of how such a system might operate is found in

The imposition of taxes of commuters parking downtown is also suggested. In terms of implementation, this might be accomplished by charging garages a certain fee on all cars originally parked between certain hours remaining for a certain length of time.

Raising of the state gas tax and use of some of these taxes for rapid transit is also recommended. The reasons for such a proposal are clear; chances of acceptance, however, hinge on southern California deciding that it needs a rapid transit system.

Again, these proposals are made in the hope of switching people from cars to mass transit; however, to impose stiff costs for automobile commutation into San Francisco when viable mass transit options are not available invites business exodus from San Francisco to the suburbs, which is not desirable. Therefore, care must be taken in the timing of the implementation of these proposals. For instance,

BART introduction might be an excellent time to introduce the variable toll on the Bay Bridge, while such a toll structure should be approached more cautiously (perhaps a less severe variation) on the Golden Gate Bridge.

## 2. Major San Francisco Projects

### a. Construction of a Richmond Rapid

The area between Golden Gate Park and the Presidio is a high density corridor with a population that works in the downtown area. At the present time there are several routes running into the Central Business District (CBD). During the evening peak hour, roughly two busses per minute leave the CBD for Richmond through the Western Addition.

The demand can easily sustain a subway, according to the Department of City Planning. Therefore, it is recommended that Simpson & Curtin's recommendation for a Richmond Rapid be accepted, and construction begun on it by 1975. The total cost would be \$221 million.

There would be a double track rail tunnel with twelve stations, beginning at Market and Montgomery and extending under Post and Geary Streets to 45th Avenue. (See Fig. Such a route would be heavily utilized; Simpson & Curtin predict 100,000 daily riders. It would cut the present running time for the 5.85 miles from 25.9 minutes to 13.8 minutes, or 47% -- a substantial reduction.

There is an additional advantage to this route: it will tie in with the Marin rapid transit project recommended earlier. The link would be at 19th Avenue.

### b. Build the Hunter's Point Expressway

The proposed Hunter's Point Expressway was discussed earlier in connection with San Francisco's freeway system. Some of its advantages were that it would take truck traffic off of Hunter's Point streets, and make the area more attractive for needed industry. In particular,

the Expressway would serve the Naval Shipyard as well as the San Francisco Port Authority development of a containerized shipping area at India Basin. A traffic flow advantage is that it would take some of the traffic off the James Lick Freeway. The disadvantage is that it is another freeway, and somewhat of a blight on the bay. Nevertheless, it will be at sea level and thus less visible from shore.

The recommendation is made to build it, regardless of whether the Southern Crossing is constructed. The containerized shipping area and the Shipyard both need better transportation service; the residents of the area would like fewer trucks on their streets.

c. Put the Embarcadero Underground, and Complete it

The need for a freeway link between the CBD and the Golden Gate Bridge is quite apparent. At the same time, the present attempt to provide such a link is a visual disgrace.

It would be very expensive to tear down the Embarcadero Freeway, but it should be done. The entire road should then be placed underground, with a route to be carefully chosen. The cost of such a project has been estimated at \$300 million by the State Department of Highways.

d. The Southern Pacific (SP) to CBD Corridor

The Problem - At the present time a large number of commuters arrive daily at the Southern Pacific station in San Francisco. A great percentage of these commuters have ultimate destinations near the center of the CBD, which is slightly less than a mile from the SP station. Most commuters now find that the existing transportation systems do not adequately serve their needs in completing the final link from the SP station to their place of work and back again in the evening. The problem of designing a system which will provide this desired service is complicated by

the fact that it must be almost entirely a rush hour system. It must be a system which during the non-peak hours may lie dormant without accumulating large maintenance costs, or it might be a system which would operate in another mode or for a different purpose during the non-peak hours. In addition to this irregular sort of service that it must provide, the system must also be able to accomodate loading of nearly 100% of its passengers from a single point, the SP station, and disperse them to a large number of closely spaced destinations within the CBD and then to reverse this mode of operation for the evening rush hour demand.

To be attractive to the commuters, the system must be able to service a large number of destinations and to cover the short distances with high speed and short waiting times for the passengers. It is also desirable to find a system which will minimize installation and operating costs. If costs can be kept low and outside revenues found, the system could be offered to the users at very low fares or none at all. Finally, the system must look to the future and possibly have built-in provision for expanding to meet the enormous increases in demand expected over the next twenty years.<sup>1</sup>

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<sup>1</sup>Looking only at the morning peak demand period, it can be noted that over a one hour period nine trains arrive at the SP station, thus unloading a minimum of 4200 passengers per hour during the peak periods. It has been estimated that the rate actually rises to 8000/hr. and more for short periods of time, or when trains begin to bunch together (minimum headway is 3 minutes). With twenty year increases expected to be over 100%, this demand will easily rise to over 20,000 passengers per hour. This sort of increase makes it mandatory that a system be designed with maximum flexibility in order to meet these extreme changes in demand. Present systems show neither the ability to handle the present demand adequately and attractively nor the provision to handle increased growth. Conventional buses currently provide the only means of public transit from the SP station to the CBD. This, of course, is done with long waiting times unreliable service, and cost to the user. The main alternative has been walking or running, accentuating the need for a new system.

The Proposal - In finding a solution to the problem, we hope to closely approximate continuous capacity service and yet to build in flexibility so that the system might meet any changes in demand. Also, in order to minimize transit time, a system which will spend little time in parking, loading, and unloading passengers is necessary. Several plans for realizing this system have been studied, including:

- 1) a Carveyor-type people mover
- 2) high speed moving sidewalks
- 3) extending SP tracks up Third Street to Market
- 4) running SP trains on State Belt tracks up to the Ferry Building
- 5) a tunnel walkway
- 6) a fleet of trams which could provide shuttle service on existing streets

All options except 6 are rejected at this time due to high initial cost (1,3,5), technical impracticality (3,5), insufficient solution to the problem (2), and political infeasibility (4). Also if Peninsula commuters are someday serviced by another carrier (say BART), then a system in which start-up cost cannot be recovered will be viewed as wasteful by taxpayers.

The vehicle which is proposed to meet these criteria is a twenty passenger tram with side-facing bench style seats (Fig. III-13). This design will minimize loading and unloading time by providing each passenger with direct access to the street. Stopping time can then be minimized and the tram will spend the major portion of its route time in transporting passengers from point to point at normal road speeds. The small trams in large numbers will be able to provide something near continuous capacity service on the main corridors and yet be able to reach a large number of destinations during the morning rush hour. Similar arguments may be made for the evening peak period. (Throughout this report, the problem will be approached as one of accommodating the



Figure III-13. TWENTY PASSENGER TRAM

morning rush hour. The descriptions that will be given may be rearranged to be made suitable to the evening rush hour application.) Those vehicles which move primarily down the main corridors will also be able to increase their capacity by pulling a trailer. The trailer will have a design similar to the tram itself, however without a power plant. It too will carry twenty passengers in sidefacing seats. The capability of adding or subtracting trailers to meet short run changes in demand and the capability of alternating routes to meet long run changes in demand is believed to give the system the desired flexibility to cope with the flows of commuter traffic.

It is hoped that this system will provide service to other points in addition to the SP station. With proper routing the service can be extended to the Transbay Transit Terminal. Trams will make stops in the financial district, shopping district, and Yerba Buena area as well as providing continual transportation to the center of commuter destinations. Hopefully, every commuter who arrives at the SP station will spend only four to seven minutes in transit, with little or no waiting. When the commuter traffic is large, trams will flood the area and take precedence over automobiles on the streets along the tram routes. As the number of commuters increases, lanes or even streets will be set aside for tram traffic only, in the hope that trams will eventually provide nearly all the transportation within the CBD.

One of the most important parts of the proposal is to find a use for the trams during the non-peak hours. The design of the trams has been motivated in the expectation that some of the trams will be used to haul freight during the middle hours of the day. The side-facing seats have been designed to fold down and provide a flat bed to be used for carrying freight. Figure III-14 gives a view of this

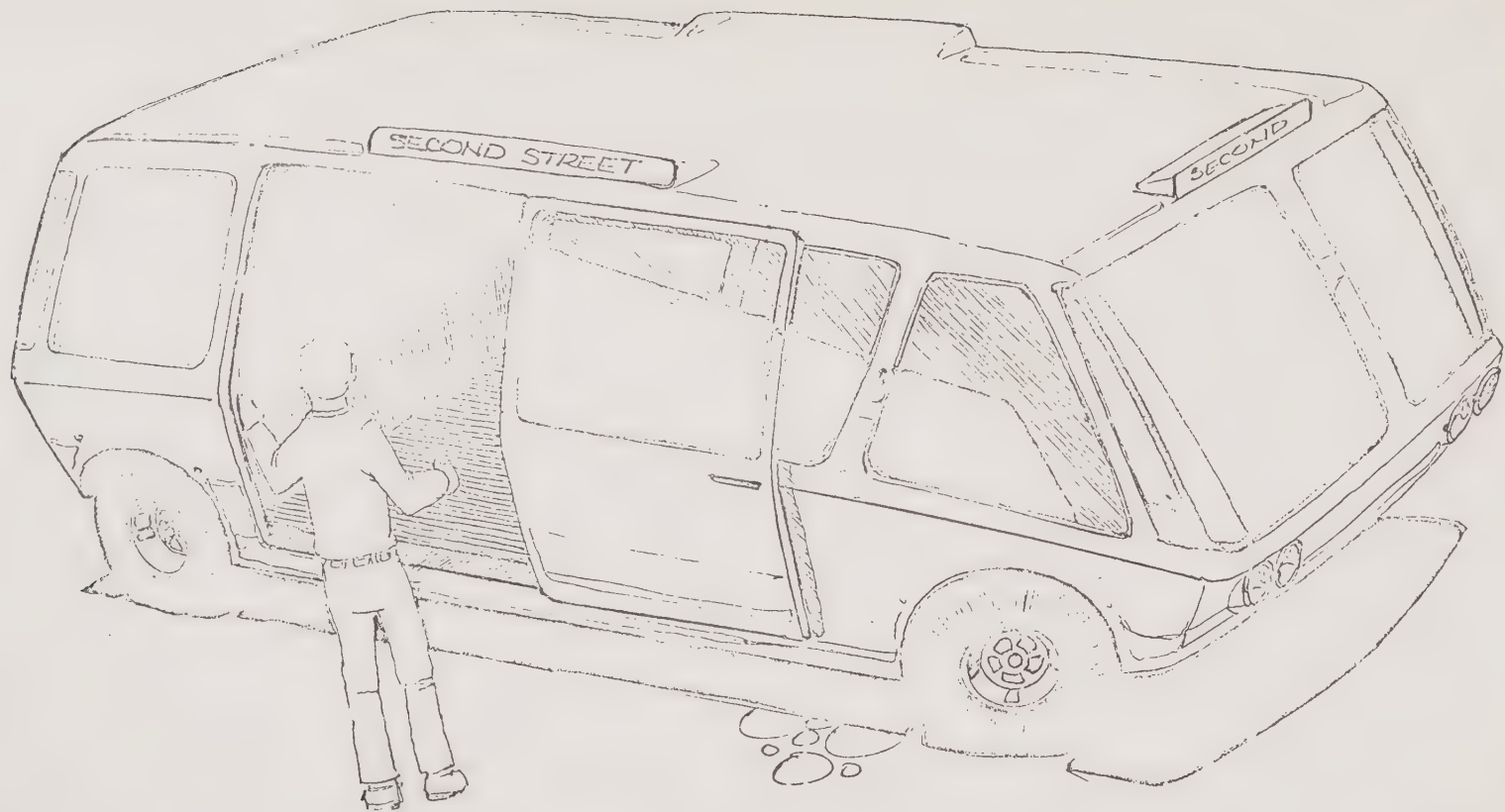


Figure III-14. CONVERTIBLE TRAM

III-175

tram. With all sides yielding open access this design should prove attractive to cargo shippers. It is expected that operation of the vehicle in the freight mode will bring in enough revenue to support operation of the vehicle in the passenger mode. If this plan of operation works out as anticipated, then passengers will be able to make unlimited use of the tram system without having to pay any fares at all. This will make the trams a more attractive mode of transportation and at the same time help to expand the use of the SP commuter trains. However, if eventually it is found that a small fare should be collected, it is recommended that it be done at the SP station where facilities can be set up for fare collection and not hinder the operation of the trams. Under this system, passengers would be required to pay fare before boarding the tram at the SP station but would ride trams free from other tram stops.

The Routing - In addition to carrying passengers away from the SP station into the CBD, it would also be desirable to transport passengers to within two or three blocks of their ultimate destination. To do this for a large number of the commuters, routes must pass well into the financial district above Market Street and several routes must run down many blocks of Market Street (Market Street transit will be discussed in more detail later). Other routes will also have to run through the shopping district and make good connections with conventional bus lines. The Transbay Transit Terminal also contributes to the commuter flow each morning and routes will be needed to connect it to the Market Street area. With the above needs in mind and the belief that the Market and Montgomery corner represents the center of commuter destinations, the following routes were proposed and can be seen on the accompanying map.

1. The main corridor will necessarily be a direct route to Market Street and return. Therefore, it is proposed that the largest number of trams



Figure III-15. ROUTING OF THE TRAM IN THE  
CENTRAL BUSINESS DISTRICT

follow Third Street to Howard, Montgomery, and Market. From the corner of Market and Montgomery they will return via Market and Fourth to Townsend and then the SP Depot. This route will service the majority of commuters and also provide connections for the BART station at Market and Montgomery.

2. To provide service to the Transbay Transit Terminal and the BART station at the Pine, Beale, and Market intersection, some trains will leave the SP station and travel to Market Street via Third, Howard, and Montgomery and then follow Market to First, Mission, Main and back again to Market. Here they will start the return trip via Market, Fourth, and Townsend to the SP station.
3. A variation on the above route is to follow route #2 to the corner of First and Mission but to return from here through the Transbay Transit Terminal down First Street to Harrison, Fourth, Townsend and the SP Depot. This route would be particularly important during the evening rush hours.
4. The final route considered would service a section of the financial district. As proposed it would follow Third Street to Kearny, California, Battery, and then Market. The trams would then return via Market, Fourth, and Townsend to the SP Depot.

These proposed routes are not intended to be exclusive but are merely presented as typical examples of the many excellent routes that might be conceived. In each of them, however, an attempt has been made to facilitate connections to and from the SP station, Transby Transit Terminal, BART stations, and the Market Street Mall trams proposed in another report. The lengths of the above routes are given below:

Route #1	-	2.3 miles
Route #2	-	3.1 miles
Route #3	-	2.7 miles
Route #4	-	3.2 miles

It is expected that trams will have a very good average speed over these routes. Conventional buses currently average

eight to twelve miles per hour on a typical bus route. Trams however, will be able to do better, particularly since loading and unloading times will be considerably reduced. Tram designers estimate that it will take only ten seconds for leading. If time is added for slowing, stopping, and restarting it is possible to make a very conservative estimate of 30-40 seconds per tram stop. Assuming that the trams will travel at the same road speeds as a conventional bus, it is believed that a tram will be able to average a minimum of 10-13 miles per hour. This is probably a very conservative estimate also, but to ensure adequacy in the following calculations it will be assumed that trams will average 12 miles per hour. If, in addition, it is assumed that the average route will be three miles long, then each tram will traverse its route four times every hour. Estimating 4000 passengers per hour for minimum peak demand, at four routes per tram per hour and twenty passengers per tram it is found that a minimum of 50 trams will be needed to accomodate this load. Any overloads will be handled by adding trailers to some of the trams. With 50 trams departing from the SP station every 15 minutes, this represents a fairly large flow in addition to the regular street traffic. Some simple calculations show that this would mean a spacing of more than two vehicles per block. With this kind of density it would be necessary to set aside one lane of Third Street and one lane of Fourth Street for trams only during the rush hours. Cross traffic on Third and Fourth Street would also have to be closely controlled. Judging from train arrivals and departures, the system would need to be in full operation from 7:00 to 9:00 A.M. each morning and 4:00 to 6:00 P.M. each evening, or a total of four hours of operation at full capacity each day. A few trams would continue to provide services during the remainder of the day. Finally, to facilitate travel for the passengers and to help the system work efficiently, it is

recommended that schedules and routes be displayed publicly at each tram stop and strategic points elsewhere. Color coding might also be used to ease identification of desired trams.

The System Finance - The costs of the tram system are relatively low. The estimated cost of a tram is \$15,000. For 50 trams this means an initial investment of \$750,000. If it is assumed that drivers receive wages of four dollars per hour, then 50 trams operating four hours each week day would amount to a driver cost of \$200,000 per year. Finally, trams would have an operating cost of 15¢ per mile. The yearly operating cost for 50 trams traveling twelve miles per hour for a total of four hours each week day would be \$90,000 per year. Combining drivers' wages with other operating costs makes the total operating cost \$290,000 per year. If the system operates at full capacity of 4000 passengers per hour for four hours each week day, then four million passengers would use the tram system each year. Four million passengers at \$290,000 implies a cost of 7¢ per passenger per trip. Revenues to support the passenger operating mode would come from profits made by operation in the freight mode. If this should not be feasible, then the trams might draw support from subsidies made by local businesses whose employees make use of the tram transportation system. Another alternative would be incorporating the cost of tram operation into the commuter's SP ticket. Finally, if fares need to be collected, then it is suggested that users pay 10¢ each morning and each evening as they board and unload from the trams at the SP station.

The Freight Mode - Detailed information about operation of the trams in the freight mode has not yet been accessible, and it should be noted that additional study will need to be done in this area. However, some significant data has been found which will indicate the practicability

of this idea. At present there are between 4800 and 5000 Teamsters operating 72,500 trucks and trailers within the city of San Francisco. The total number of local freight carriers is about 3200. Within the CBD freight is hauled only between the hours of 8:00 A.M. and 5:00 P.M. The largest part of this freight moves through the main arteries of Third Street, Mission, Howard, Folsom, and Brannon. If the majority of trams carry passengers from 7:00 A.M. to 9:00 A.M. and 4:00 P.M. to 6:00 P.M., this would leave them free to ship cargo from 9:00 A.M. to 4:00 P.M. each day. Trams would be capable of carrying two tons of freight at any one time. If many trams operated along the main freight arteries, some of them could easily switch to passenger mode for short periods of time when there is no freight to be hauled.

There is at least one major obstruction to this sort of dual mode operation. Two large unions would be involved with the tram system. Bus drivers in the city are members of the AFL-CIO while truck drivers are affiliated with the Teamsters union. Both of these unions are strong. If the system were designed to change drivers at intervals during the day to allow truck drivers to haul freight and bus drivers to haul bodies, split shifts for the drivers would be required. Teamsters working within the city of San Francisco work either 8 A.M. to 5 P.M. or 8:15 A.M. to 5:15 P.M. They do not haul at night, and they do not work split shifts. Persuading them to work split shifts would be more than a minor obstacle.

However, it would be ideal if the same driver could function as both a bus driver and a freight driver, but again problems arise because of the union clash. Since this second alternative is the only realistic one, some sort of merger between the unions or possibly some legislation could solve the union problem.

Once the union difficulties have been eliminated it

should be a minor hurdle to train personnel to function as both bus and freight drivers. Another problem is that of the legal authorization for the operation of such a dual mode system, which is easily solved by proving that the system would serve "public convenience or necessity". These problems all need further investigation and much more study will be done about the freight mode operation when necessary information becomes available.

An Alternative - The most logical alternative to the tram system of transporting passengers is a continuous capacity system. A moving sidewalk extending from the SP station to the corner of Third and Market would 0.9 miles long. The width of moving sidewalks is determined from passenger flows. With the tram system it was assumed that peak demand would be 4000 passengers per hour and that overflows would be handled by trailers. Since there are no provisions for overflows on moving sidewalks, a peak demand of 5000 passengers per hour will be assumed in order to handle overflows. Each foot of sidewalk width will have a capacity of 500-1000 passengers per hour. At 5000 passengers per hour this would imply an eight foot wide moving sidewalk. The speed of such a sidewalk would be variable from five to fifteen miles per hour. A final requirement for such a sidewalk would be land use. At surface level the sidewalk would cause many engineering problems in passing over intersections and cross streets. One possibility is to tunnel underground, making use of the tunnel which is expected to be drilled under the Yerba Buena center. If tunneling and other extra costs are ignored, an installation cost can be calculated. An eight foot sidewalk would cost \$150 per foot. A sidewalk which is 0.9 miles long would cost \$750,000. Operating costs for moving sidewalks are typically 7¢ per passenger.

Flexibility is the key to preferring the tram system

over a continuous capacity system. Once a moving sidewalk has been installed, a route has been established and cannot be changed to meet variations in demand. A moving sidewalk also lacks flexibility in expanding to meet increases in passenger flow. While new trams or trailers can be added to handle more passengers, new construction must begin to handle increased moving sidewalk traffic. Stations also create a problem with moving sidewalks. Stations must be separated by at least 500 feet and involve a capital investment. Tram stops, however, can be changed as desired, adding or subtracting stops and changing their location. It should also be noted that the moving sidewalk described above transports passengers only to the corner of Third and Market and does not provide them with service to within a few blocks of their final destination as the tram system does. (On the other hand, the moving sidewalk would be very attractive to any passengers moving directly from the SP station to points along or at the end of Third Street.) Traveling time on either the tram or the moving sidewalk would be approximately the same when moving about twelve miles per hour on the average. Still another problem with the moving sidewalk is its low use during non-peak hours. Where trams could operate in another capacity during off hours, a moving sidewalk would be operating at a loss for some periods of the day. Finally, a comparison can be made on costs of the two systems. As can be seen from figures previously given, both systems would have the same initial cost and both would have an operating cost of 7¢ per passenger. However, moving sidewalks have only passenger fares as revenues, whereas trams would also gather revenues from movement of freight.

Projections - While demand continues to increase, trams and trailers will be added to accommodate the additional passengers and attempt to keep the supply just ahead of the demand. Someday commuters will arrive at the SP station

at a rate of over 30,000 passengers per hour and trams will flood the city's streets. As this expansion takes place, moving sidewalks will then be added to carry large bulks of the tram passengers along the heaviest tram routes and trams will be reorganized to service both moving sidewalks and the SP station. Eventually it is hoped that a very efficient and high capacity transportation system will evolve. Parking lots might rise up near moving sidewalk stations and along the periphery of tram routes. As parking lots migrate toward the edge of the business district, the tram system will expand to handle commuters other than SP travelers. Ultimately, automobiles may then be prohibited from the center of the business district and public transportation will handle the large flows of people throughout the downtown area more efficiently and with fewer congestion problems.

#### E. Transit Along Downtown Market Street

Market Street is presently the most heavily-traveled transit corridor in the city. Between the hours of 7 A.M. and 11 P.M., buses, streetcars, and trolleys make nearly 4000 trips having some portion of their route along Market, carrying well over 100,000 passengers in both directions. The evening rush hour alone accounts for nearly 15,000 passengers on 234 trips in the outbound direction. By the end of 1972 the two underground lines of BART and the Muni Rapid will account for a great many of these trips, plus many new ones, and will hopefully ease some of the surface traffic congestion common today. Indeed, the ambitious plans in the making for complete restoration and beautification of Market Street have been chiefly generated by the potential the new subway system will create for a new pedestrian-oriented urban focus. The entire design is based on the various BART and Muni stations in their role of major transportation interfaces and nodes of concentration.

The Market Street Plan calls for substantial widening of sidewalks, resulting in a reduction of traffic lanes to two in each direction. No special lanes have been provided for buses or trams, and it is our understanding that they are to stop for loading and unloading passengers in the traffic lane itself, rather than using a special turnout. Taking this basic layout as given, we have studied the traffic flows and made some recommendations based on our study.

Our Position in this Study - We have taken as our objective the provision of smooth flow for buses and trams along Market Street, relegating auto traffic to secondary importance. This seems to be in keeping with the orientation of the entire plan to pedestrians and transit. Although Market Street is an attractive route for cars as well as busses and trams, the latter are a good substitute for the private auto, especially for rush-hour, home-to-work trips, and especially for those areas having Market Street as a portion of the normal downtown trip. We aim to maximize the attractiveness of transit for such trips, so that most "necessary" auto trips will occur across or parallel to Market Street, not along it.

#### Current Status: Market Street Reconstruction Plans

By mid-1973 Market Street will have become the transportation focus of the San Francisco Central Business District. A rather well-coordinated plan for BART trains, Muni-Rapid trains, street level pedestrian malls, and surface transit is presently being executed. The state of these plans with timetables is as follows:

BART: four stations in the CBD - Embarcadero (actually at Davis Street), Montgomery, Powell, and Civic Center. All except Embarcadero are scheduled to be completed between September 1971 and July 1972. Although fully proposed, the Embarcadero station has not been funded and remains unscheduled. BART trains will be able to pass through the

uncompleted structure to the Trans-Bay Tube in late 1972.

MUNI-RAPID: shares same four stations as BART plus station at Van Ness and Market. Excavation there begins August 1970 and between 12th and Duboce Streets slightly sooner with both completion time in late 1972. MUNI-RAPID trains should be in service as far down as the Montgomery station in December 1972.

SURFACE LEVEL: A \$30 million Market Street reconstruction project has been approved, funds have been appropriated, and final drawings are being turned out daily at the Transit Task Force. Briefly, the plans call for 35 foot wide brick sidewalks on either side of a four lane roadway. Distinctive street furniture, lighting, signs, and some 900 Sycamore trees will adorn the pedestrian-transit-private vehicle thoroughfare from the Embarcadero past the Civic Center. Additional landscaping will extend as far as the Central Skyway.

Major features of the design plan are included in the accompanying drawing. Changes from today reflected in the map are:

- 1) Closing Market from Stewart to Embarcadero.
- 2) Rearrangement of Bush and Market intersection.
- 3) Closing Eddy from Anna Lane to Market.
- 4) Extension of Fifth across Market to intersect Eddy.
- 5) Closing Powell from Ellis to Market except to pedestrians and cable cars.
- 6) Closing of Leavenworth and Fulton near the Civic Center for a plaza from Market toward the Center.
- 7) Extension of Seventh across Market to intersect McAllister.

Larger pedestrian plazas will be arranged to accomodate the masses of people expected at the Civic Center and Powell station areas. A below street passage will be installed for direct connection of Yerba Buena Center and the Powell station.

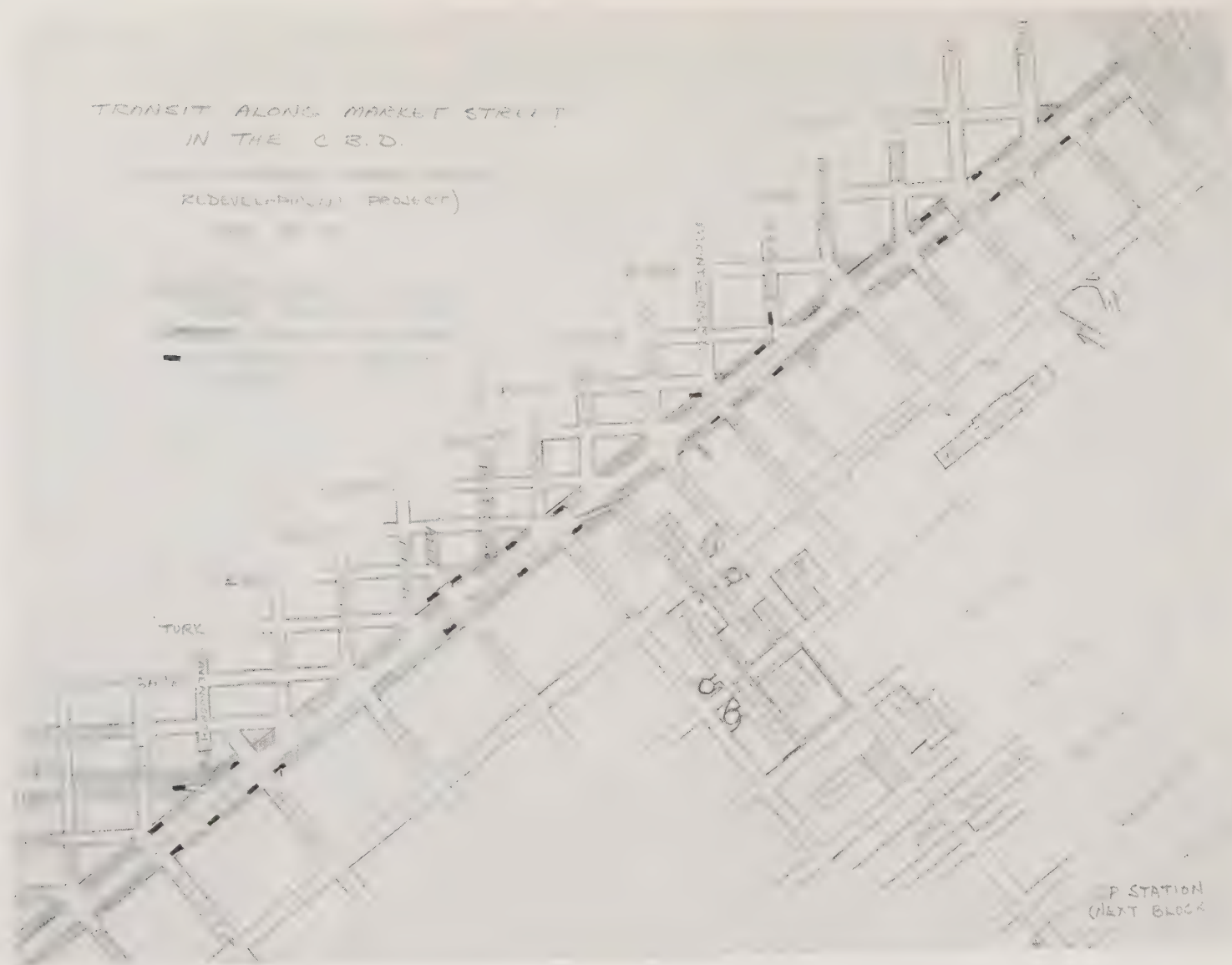


Figure III-16. TRANSIT ALONG MARKET STREET  
IN THE CENTRAL BUSINESS DISTRICT

The Transit Task Force does not envision restricting the private auto from Market Street. We believe political pressure from merchants along the street forced this stance; however, their plan has no features which would prevent future limitations of this kind.

SURFACE TRANSIT: Of all of Market Street's plans, the surface transit scheme appears most flexible at this time. Since there will be no overhead wires or street level rails, diesel busses or trams (maybe battery powered in the future) will be the surface transit vehicles. No turnouts for loading/discharging passengers have been provided along Market; therefore, stopped busses will block other traffic in one of the two lanes in each direction.

The underground work on BART and MUNI-RAPID and the pedestrian mall are all irreversibly proceeding toward completion. It appears that the area most open to suggestion and recommendation from this study is the surface transit problem.

Market Street Beyond 1972 - While there are many changes planned for Market Street concerning both transit facilities and the actual surface appearance of the street, there are some further improvements to be made. The three improvements of primary importance are the phasing out of private automobile travel, introduction and escalation of tram service for the area, and the closing off and/or improvement of side streets in various locations.

The phasing out of private auto travel is only possible to the extent that a reliable and attractive transit system is provided as an alternative. Such a system appears to be a combination of BART, MUNI-RAPID, Muni Buses, Cable Cars, Taxis, and downtown Trams. Such a system would reduce the three different types of auto travel found in the Market Street area: 1) Intercity - BART and its eventual extensions or complements would reduce this travel; 2) Intracity - this

type will be reduced with scheduled improvements of MUNI-RAPID, implementation of a Geary Street subway and improved links in the outlying residential areas; 3) Local - the proposed Downtown Tram System will provide this type of travel. The appearance of an integrated system such as this, plus the fact that auto travel has not been greatly hampered during the years of BART construction, would indicate that it is feasible to restrict auto travel on Market Street in some manner.

The actual phasing out of the auto would have to be done on a step-by-step basis, the size of the steps dependent upon the status of the alternative public transit system. The first step, immediately implementable, would be to prohibit turning onto or off of Market Street at various intersections, at rush hours. The hours of prohibition could then be increased until ultimately there would be only cross traffic on Market Street (over certain sections). The purpose of this is to provide the public transit vehicles (Muni Buses and Downtown Trams) with an almost exclusive thoroughfare (delivery trucks, emergency vehicles, and repair equipment must be allowed entrance also). It is proposed that a program of restricted auto flow be instituted from the Ferry Building to Seventh Street (where the new Market Street will change into three lanes). Coinciding with this would be the changing of Mission Street and Howard Street into opposing one-way streets, to compensate for the loss of Market as a thoroughfare.

Also coinciding with the restriction of auto flow along Market Street would be the establishment of a Downtown Tram network. This would provide service from BART and MUNI-RAPID stops to the CBD, the shopping areas, Civic Center, the proposed Embarcadero Center and the proposed Yerba Buena Center. The trams would also service other areas in-between the above mentioned areas of concentration. Such a service is

necessary for two different, yet complementary reasons; they would discourage auto travel, and encourage travel on BART and MUNI-RAPID.

Further complementing the first two improvements of phasing out the private auto and establishment of a tram network would be the closing off or improving of various side streets near Market Street. This would enable certain areas to be restricted solely to pedestrians and public transit. Such areas might vary from one-half block to several blocks. Proposed areas to consider for either closing off or improving (improving meaning reconstructing the street in a fashion similar to the Market Street change by 1972):

- 1) Continue to block off Powell Street for the cable cars, up to Geary Street, allowing cross flow on Ellis and O'Farrell streets.
- 2) Close off Stockton Street between Market and O'Farrell, and O'Farrell and Geary for shopping areas.
- 3) The blocks of First Street and Fremont Street leading to the A.C. Transit Terminal would be suitable for trams only if A.C. Transit is still important after the advent of BART.
- 4) Sansome, Battery, Bush, and Sutter streets might be blocked off or improved as they are in a major portion of the financial district.
- 5) Stewart Street would be closed down if Market Street were ever entirely closed to auto traffic.
- 6) Various blocks in and around Civic Center (on McAllister, Grove, Hayes, and Larkin streets) would be ideal to close off or improve in the future.

These are merely suggestions of possible streets and the feasibility of closing down any one of them is highly dependent upon the development of the first two suggested improvements above.

The Possibility of an Exclusive Bus Lane - Assuming the buses will continue to run on their present routes, we examined the possibility of an exclusive lane for buses, either a temporary rush-hour facility or a permanent one.

Using data supplied by Muni, we have constructed several diagrams (Figs. III-17, 18, 19, and 20), depicting volumes of bus traffic on Market Street, along with the average headways between buses (headway = length of time between arrival of buses at a given point). The volumes and headways change at those places where routes come into and leave Market. The variation in appearance of the diagrams is due to variations in routes at different times of day.

The most frequent headway, 23 seconds, occurs during the evening rush hour, with the morning peak demand being 150 vehicles per hour, or one every 24 seconds. Two of the diagrams (Figs. III-18 and 20), depict the heavy-demand periods of 7-9 A.M. and 3-6 P.M., but excluding the peak hour in each case.

We have searched unsuccessfully for some standard or cutoff point, in terms of volume or headway, at which an exclusive bus lane can be justified. Not having such a number, we proceeded to enable a further visualization of the numbers involved here by the following calculation: Given an average speed (including stops) of approximately 10 mph for Muni buses, and scaling the distance from the Embarcadero to Van Ness at 18 blocks and 1.87 miles, it takes a bus an average of 36 seconds to travel one block. Comparing this to our headway of, say, 23 seconds implies about one and one-half buses located in one block at any one time. Thus we have some idea of the "density" of buses, and we can speculate as to whether we should have auto traffic in the same lane as bus traffic given these kinds of headways, especially if the buses are stopping in the traffic lane itself.

Besides such bus travel it is proposed that about 75-100 trams also serve Market Street alone in a manner similar to the SP to CBD link. Such trams could augment the buses, hopefully making it possible for the buses to make fewer

# BUS TRAFFIC ON MARKET STREET

OUTBOUND, 4:45-5:45 P.M.  
(PEAK HOUR)

H = HEADWAY, IN SECONDS

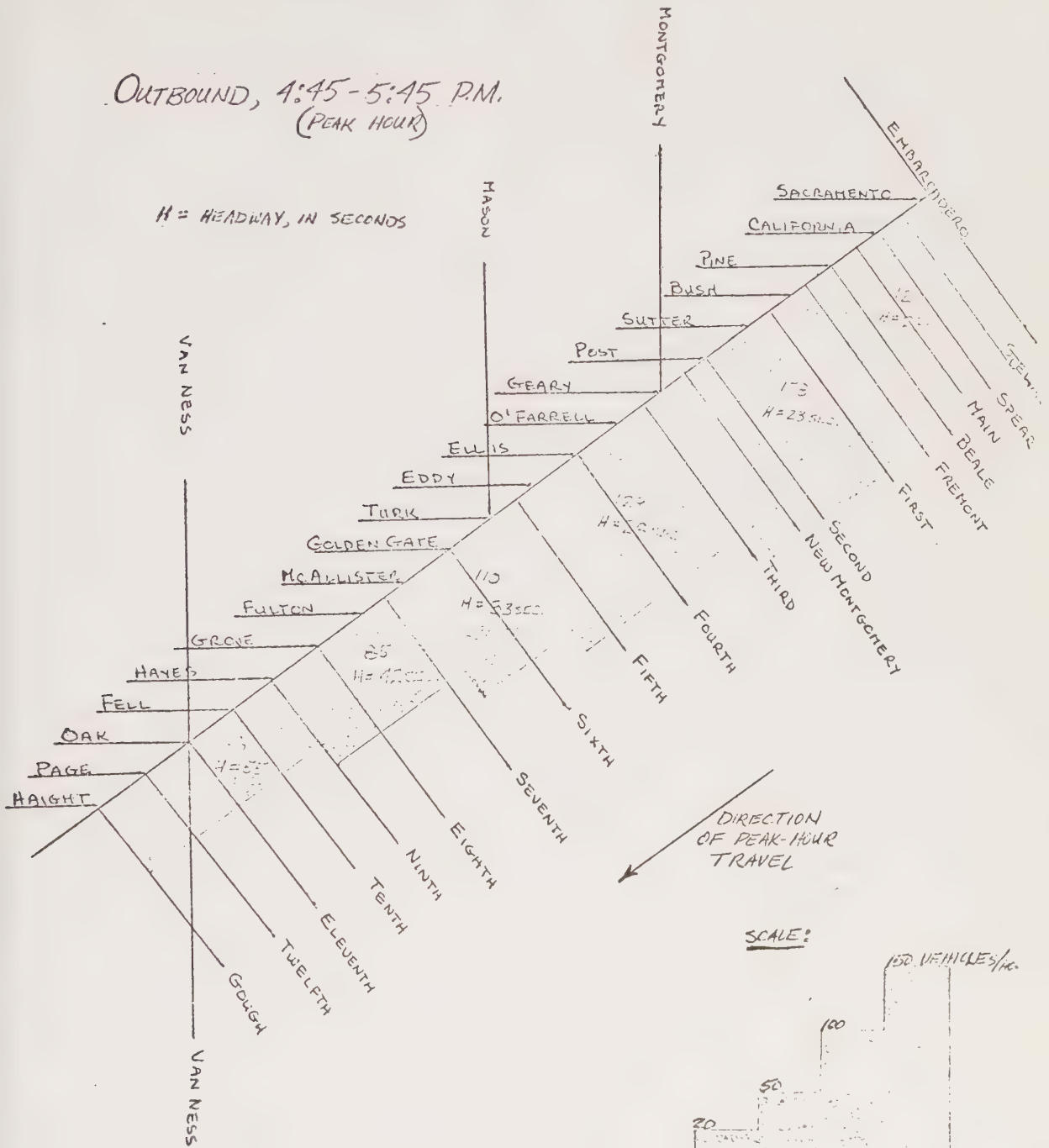


Figure III-17. BUS TRAFFIC ON MARKET STREET  
Outbound 4:45 - 5:45p.m. (peak hour)

# BUS TRAFFIC ON MARKET STREET

OUTBOUND, 3:00-6:00 P.M.  
(OTHER THAN PEAK HOUR)

H = HEADWAY, IN SECONDS

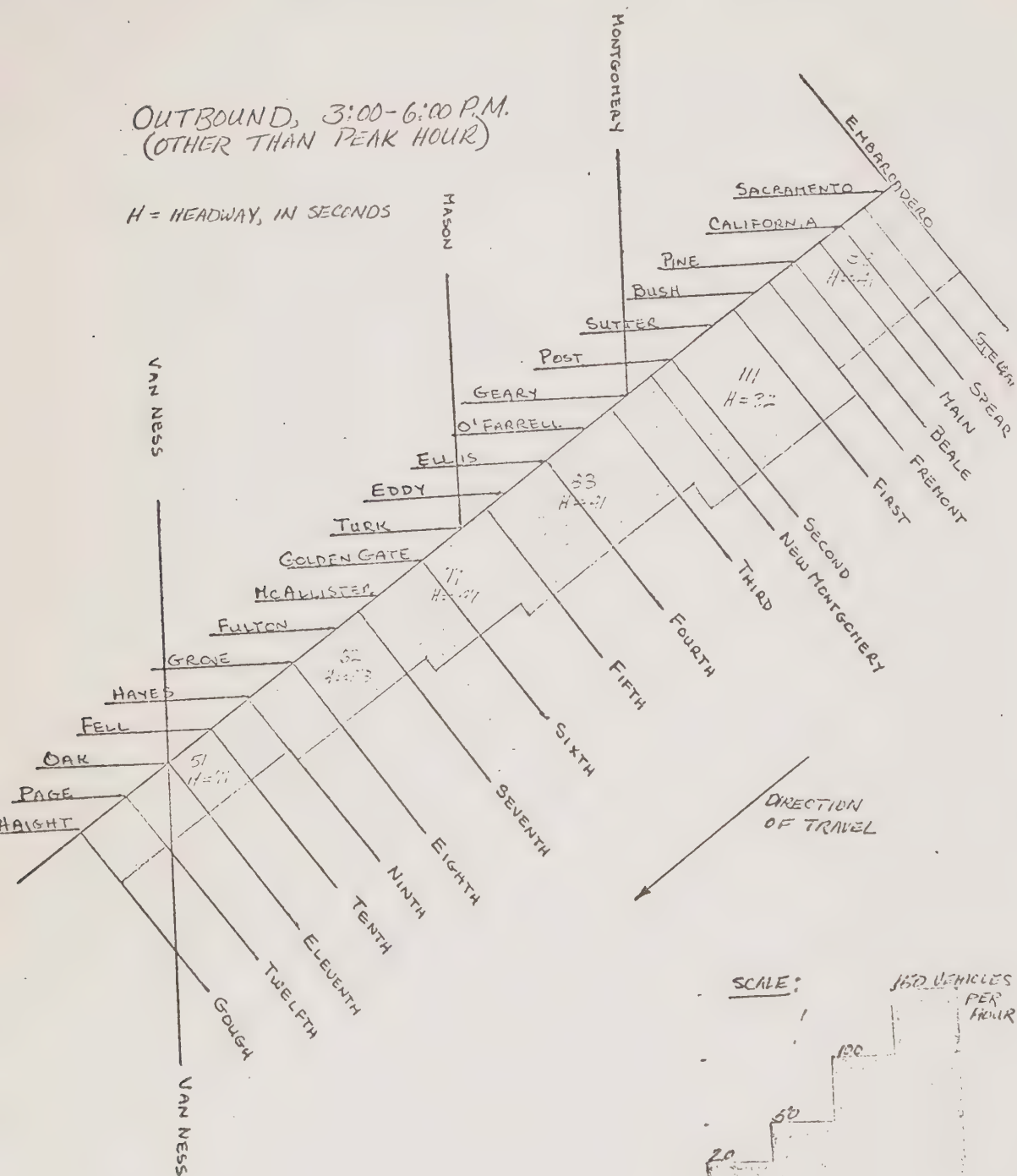


Figure III-18. BUS TRAFFIC ON MARKET STREET  
Outbound 3:00 - 6:00p.m. (other than peak hour)

# BUS TRAFFIC ON MARKET STREET

INBOUND, 7:30-8:30 AM.  
(PEAK HOUR)

H = HEADWAY, IN SECONDS

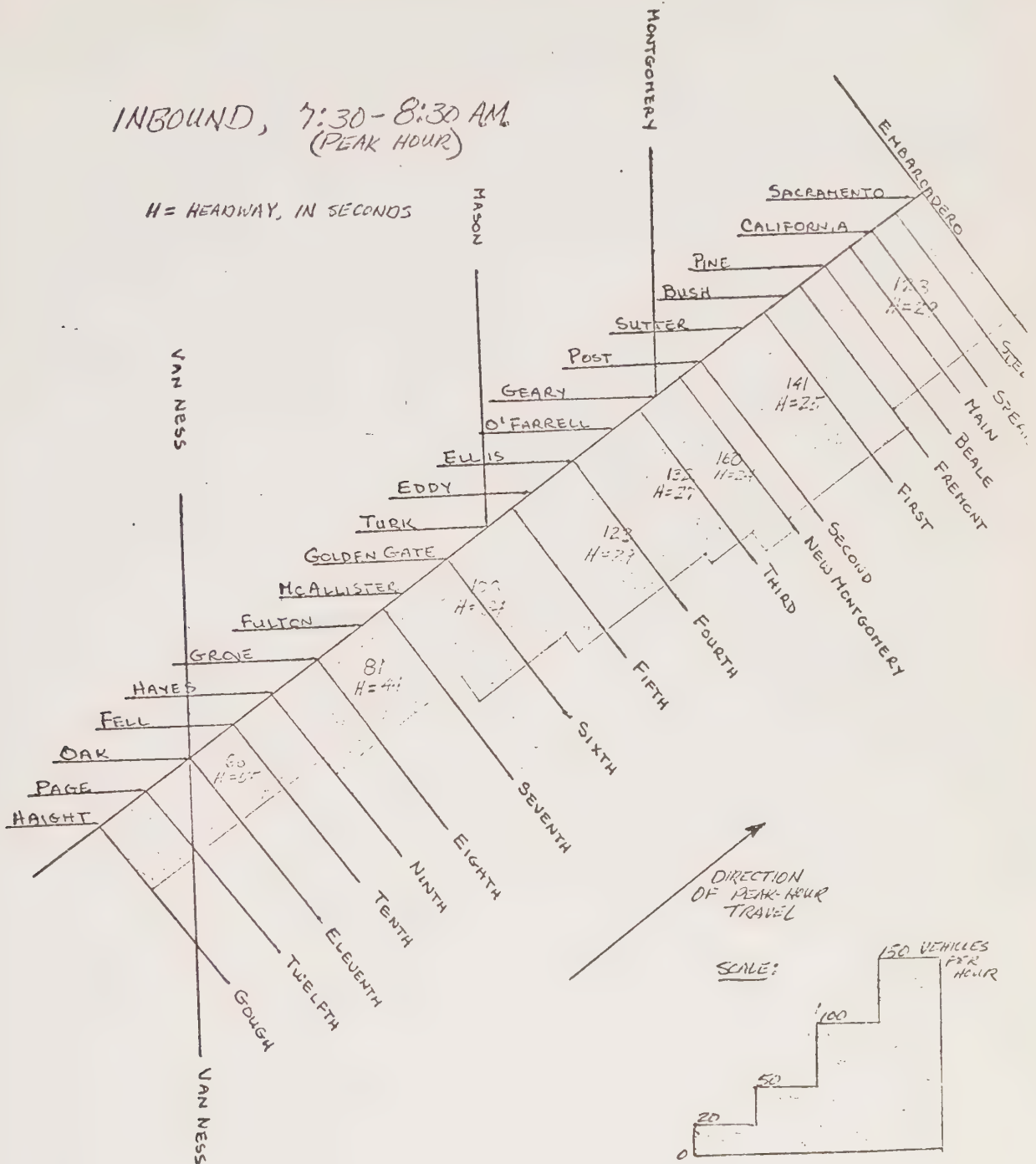


Figure III-19. BUS TRAFFIC ON MARKET STREET  
Inbound 7:30 - 8:30a.m. (peak hour)

## BUS TRAFFIC ON MARKET STREET

INBOUND, 7:00-9:00 A.M.  
(OTHER THAN PEAK HOUR).

$H = \text{HEADWAY, IN SECONDS}$

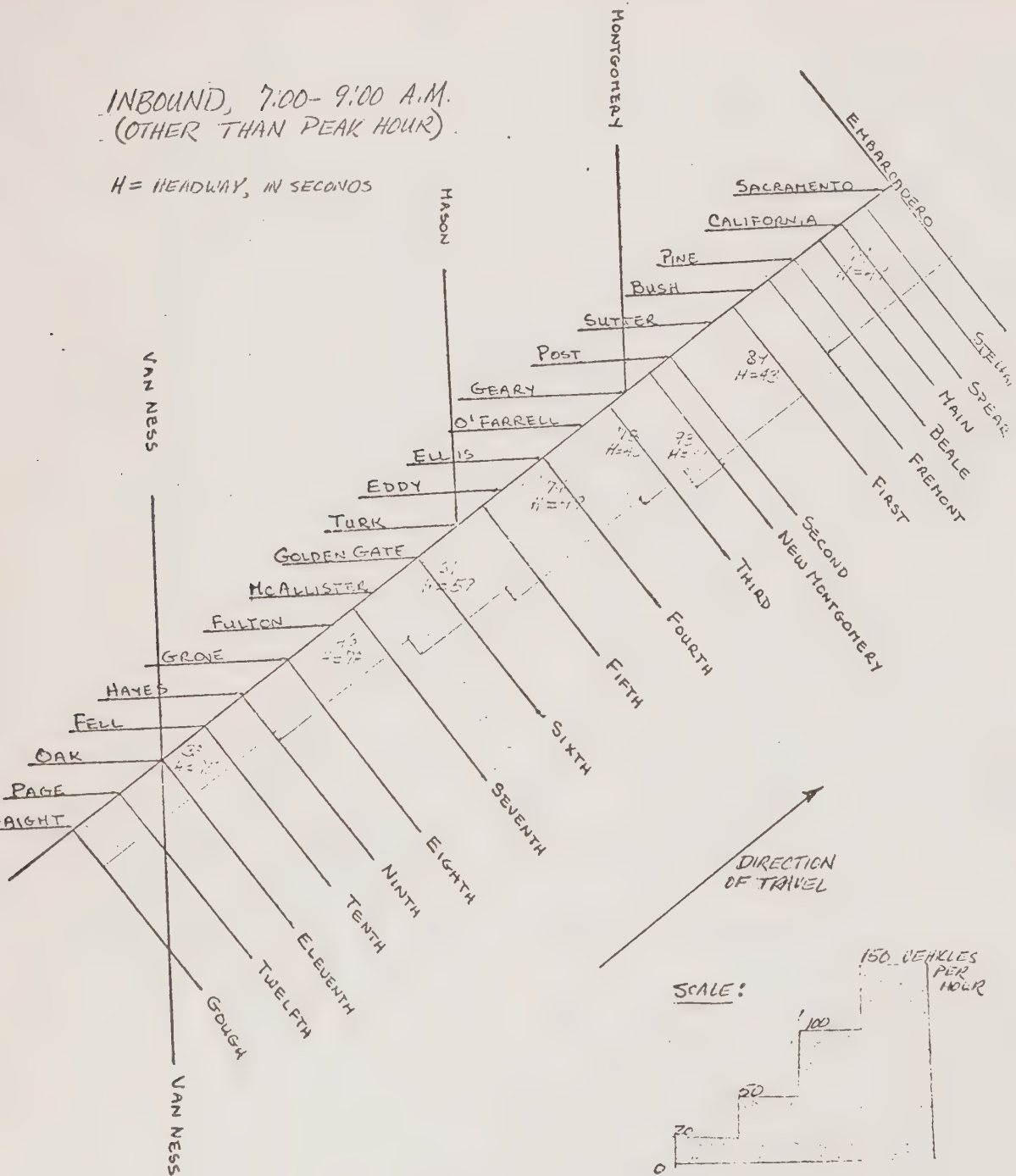


Figure III-20. BUS TRAFFIC ON MARKET STREET  
Inbound 7:00 - 9:00a.m. (other than peak hour)

stops. However, these trams would also operate at a density of more than two trams per block, which, when added to the one and a half buses per block in the rush hour (along with the SP to CBD trams that use a section of Market Street), would make automobile travel during these periods impossible.

Recommendation - Our recommendation is therefore to establish exclusive tram lanes during the non-peak hours for both passenger and freight/parcel delivery and pickup. These would be the outside lanes of Market Street, leaving the two inside lanes, one in each direction, for automobile use. This could be done by using rubber cones in a manner now used for reversible lanes on some highways and bridges, and by appropriate signs. Auto traffic would be restricted to the inner lane. Some problems associated with such a scheme are:

- 1) Volume of autos being too large for one lane -- this is recognized, but is a secondary consideration compared to that of optimizing tram travel.
- 2) Difficulty of right turns for autos -- some such turns would be necessary, but they should be allowed only in a few places and perhaps by special signals.
- 3) The possibility of overloading other streets with autos that would normally use Market Street. This should be checked if the plan is implemented, to see if it actually occurs.
- 4) The need of some trams to overtake others, i.e., to use both lanes. This is a possibility, but probably will be alerted by an increase in average speed resulting from the tram only lane.

During the peak rush hour times in the morning and evening, we propose that all auto traffic in the peak direction be prohibited from Market Street between Hayes Street and the Embarcadero, and that one lane be reserved in the non-peak direction for return tram travel. Thus only one lane would be open to automobiles in the peak hours.

Another possibility would be to have three lanes in the

peak direction during the rush hour to allow for one lane of auto traffic in this direction. This would allow for the one other lane in the non-peak direction to be used for tram return as above.

As stated previously, these recommendations are somewhat subjective and are based upon some unproven assumptions. We therefore recommend that this proposal be implemented on a trial basis at first (in the manner recommended previously in the section on future directions for Market Street), then extended or discontinued after it has been evaluated.

## F. COMMUNITY SERVICES

### 1. An Urban Health Care Proposal for San Francisco

A health-care system for San Francisco should be designed to provide comprehensive health care which is acceptable and accessible to most citizens, whether or not it is financed through a mixture of public and private alternatives. Several alternative proposals are presently before Congress or are being formulated, which were mentioned in a prior section of the report, but at the present time there is no indication which one will be ultimately approved or when approval will be forthcoming. The mixture of public and private facilities does not imply that dual systems, one for the wealthy and one for the poorer classes should be established. Rather, all segments of the population would have access and would accept private specialists and clinics as well as public health centers, emergency facilities, and hospitals. This would include elimination of the humiliating "means" test, because the system would be equally available to all.

Care on a local level would be primarily centered in the Community Health Centers, and expanded version of the District Health Centers (including ambulatory services), and the private clinics. Obviously, the health centers would be unable to accomodate the expected patient load, and therefore, the privately-operated facilities, such as Kaiser Hospital and the clinic system, would be expected to handle some of the patient load. For those unable to take advantage of care in the community health centers because of distance, etc. care could be offered in specifically designated private clinics under contract to the city. For the more financially solvent segments of the population, care would be provided through their existing physicians as well as through the increasing number of private clinics and group practices. It would be unwise to expect a total shift from

one sector to another; nor would it seem probable that the private sector will become fully nationalized or even completely integrated with the public sector-community health centers and hospitals within the next 20 yrs. Rather, given the time span of twenty yrs., the private sector would probably develop into clinics of physicians from several specialties and group practices of physicians from similar fields.

An expansion of the large "competitive cost-conscious" health plans, such as Kaiser, could also be anticipated, unless Congress chooses to institute a national health insurance plan making a subscription to the Kaiser Plan uneconomical. Utilization of the above-mentioned private facilities, whenever possible, could help fill some of the gaps in the existing health care delivery system and equalize the patient distribution between the available facilities.

The public sector could therefore concentrate on serving people who could not obtain adequate care because of financial difficulties, and expand into areas where private facilities do not exist or where the private sector is reluctant to establish itself. It could also improve care in areas where the private sector does not provide adequate services.

The size of the community health centers, the extent of their coverage to the community, and the magnitude of the staff would be determined by the needs of the area. The system would be a flexible one; Hunter's Point-Bayview would have a larger direct-care budget than the Sunset and would have a large number of physicians in attendance at the health center. Residents of Hunter's Point do not have access to health services and financial resources as have the residents of the Sunset area, which is 95% white middle class. Although direct-care clinics would be located in selected neighborhoods, certain basic services would be available in all sectors of the city. These would include maternity and child-care clinics, health, and pollution control sanitation

offices, health-education programs for the schools, as well as emergency medical personnel, who would be dispatched with the ambulance crews. In neighborhoods where community health centers are established, family clinics and facilities for the examination, diagnosis, and treatment of routine ailments would supplement the basic services.

The community health centers would be organized on a decentralized basis, situated in each in-need district of the city. Optimal placement of these centers would be in proposed local civic centers, where appropriate local municipal offices would be located. This decentralization would assist greater interaction and responsiveness between the residents and the municipal officials. Involvement of the community in civic projects would also be a step toward decreasing the likelihood of mass local "rebellion" against city officials and against government in general, as well as educate the local residents to the problems confronting municipal officials.

In the districts where centers have not already been constructed, or where the center is a temporary one (if only local offices), the community would have joint responsibility for the planning and the construction of the new centers. In every possible instance, indigenous contractors would be utilized and in all cases, the construction awards would stipulate that local residents be hired and given on-the-job training while building the center. Monthly forums where local community groups can express their opinions as to their needs and the services they require in the prospective centers and also in districts which have existing centers would be organized. In addition, consumers would be represented on the boards of all the centers (approx. 40-50%), recognizing, of course, that proficiency and expertise in the problems of a delivery system would have to be developed in these members. Unfortunately, as is often the case,

results are expected immediately without waiting for the people to acquire the necessary expertise. Consumer advocates as well as legal-aid assistants would work with the board and in the communities of familiarize the representatives on the boards and the people with the legal requirements and the funding intricacies.

Often consumer groups that are represented on the boards feel inhibited by their lack of knowledge in the field and their inability to argue effectively with the professionals on the board. To alleviate this problem and to engender more respect for the consumer interests, the by-laws would clearly specify consumer power and responsibility (e.g., site selection, types of services desired, hours of the centers, coverage in the community, etc.) and would protect legitimate professional prerogatives, especially the confidentiality of the patient-doctor relationship, the technical problems, and staff training procedures.

Although presently there is little research and evaluation completed on the programs of the centers, there would be established a continuing research and evaluation effort at the health centers to improve and revise the services. Direct consumer input could be channeled into the evaluation process through the medium of the Forums and the consumer representatives on the board. To be successful, professionals must be willing to listen to and defer to the requests of the community. In this way, community desires and complaints could be incorporated into the system.

The centers minimally would be organized for a population base of 100,000, although in certain areas (near San Francisco General Hospital with its out-patient clinics for instance), the figure might be higher (300-400,000). The delivery system would be organized on two levels. The first level would consist of a comprehensive health-care program in the community, involving Public Health Nurses and Community Health

Aides, while the second level would be the community health center, which would be the direct-care facility in the neighborhood.

The comprehensive health-care program itself would focus on the Community Health Aide, who would periodically visit the approximately 250 families (1000 people) assigned to him and be cognizant of the health and individual difficulties of each family. Each Public Health Nurse would perform bedside nursing functions, health education activities, etc. for the families assigned to her and would review the work of the two Community Aides in her jurisdiction (approximately 500 families or 2000 people). There would be a supervisor for every eight Public Health Nurses (16,000 people) and a Public Health Physician, aided by a staff of three specially-trained nurses (maternal child-care, chronic diseases, geriatrics), two sanitarians, a statistician, an administrator and clerical help, would complement the aides and Public Health Nurses and oversee the entire program for the community (approximately 50,000). The advantages of this type approach would be that there would be a continual review of the health needs of all the families (especially pre-natal and post-natal care and communicable disease), even those who do not usually avail themselves of the facilities of the center. Bed-ridden patients would also have access to care, while a program of health education and correction of improper sanitary procedures could be instituted in the home.

Disadvantages would primarily arise from the organizational and implementational difficulties and the need for an adequate training program for the Community Health Aides. The Community Health Aides would be recruited from the community, as would the Public Health Nurses if possible. (See Fig. III- 21 for organizational chart).

The comprehensive care offered in the community health center would be family-oriented and personalized and would

250 families

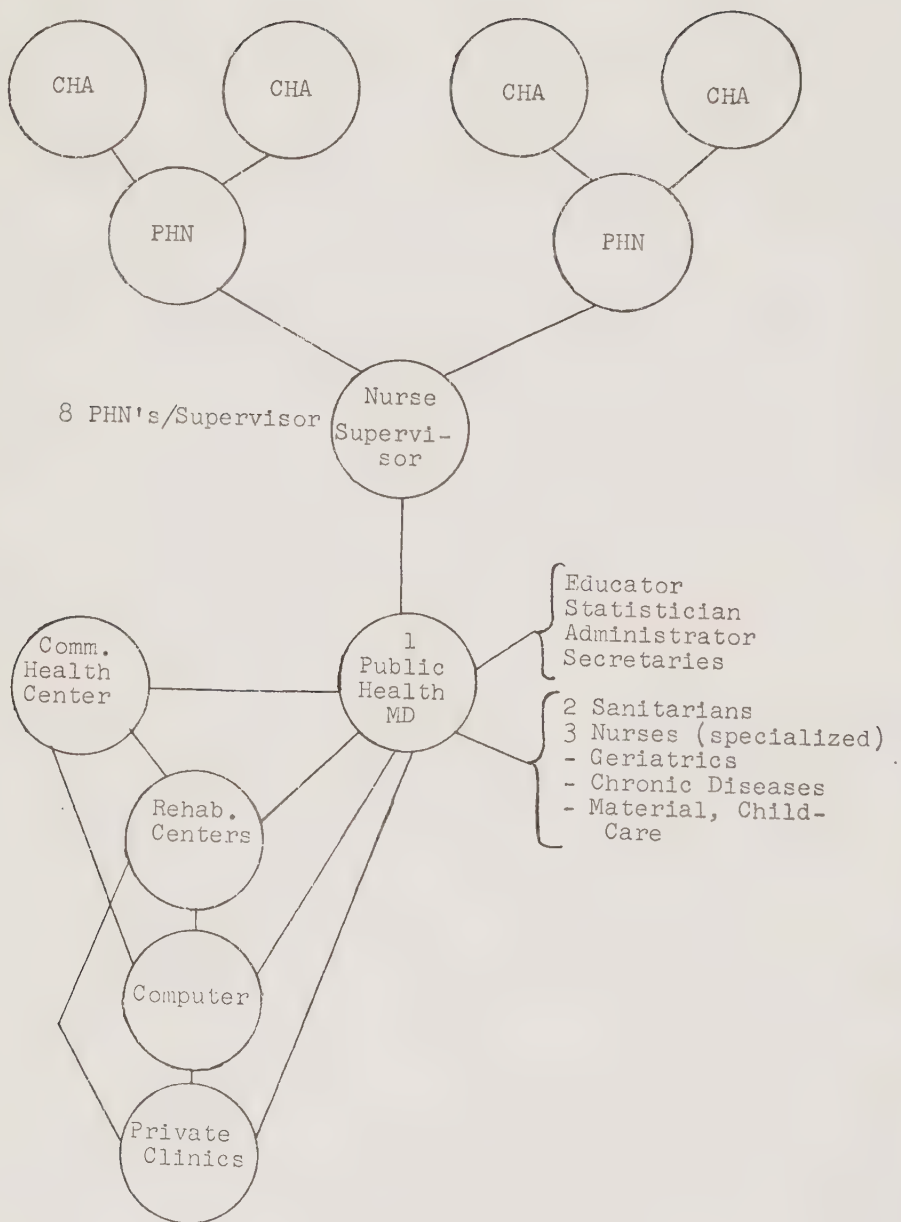


Figure III-21. COMPREHENSIVE HEALTH PROGRAM  
ORGANIZATIONAL CHART

occur in an environment appropriate to the diagnosis and treatment of disease. Each center would be responsible for the primary care of the patient and the referral of cases through completion. Emphasis would be primarily on the early detection of disease, health education and the prevention of disease, and the maintenance of health. Coordination between the health-care program in the community and the community health centers would be essential, and there would be frequent (at least monthly) progress reports by the community aides to the center in their area.

The community health center would use a team approach in diagnosing and treating patients. The team would consist of a physician, who would have ultimate responsibility for the patient, supported by a registered nurse, a psychiatrist or psychologist, and a public health nurse, who would be responsible for the follow-up on the treatment and who would work with the community aides in the comprehensive care program to ensure that the treatment was effective. In cases where a language barrier between the resident and the centers' staff might exist, the center could rely on the Community Aides to bridge the communications gap. The aides could also assist both the resident and the center staff in establishing how their different styles relate to the common health solution. In addition, the Public Health Nurse would receive reports from the Community Health Aides regarding the general living conditions of the family (i.e., the economic circumstances, the internal stresses in the household, the housing situation, etc.), which could be evaluated by the team, in conjunction with the Community Aide, if necessary. The physician (a general practitioner or internist) would also be assisted by a physician's assistant, who would perform routine services, such as vaccinations, injections, bandaging, etc. Applicants for these positions would be recruited preferably from the impact areas. Clinicians, such as

pediatricians and obstetricians would complement the team when needed, while specialists in dentistry, ophthalmology, optometry, etc. would be utilized in a supportive role on a contract basis. The team would have available the services of a physical therapist, occupational therapist, and X-ray technician and would have access to a centralized fully-equipped health department laboratory which would be used by all the centers.

Referral of cases to a hospital, which is the next level of care, would be reserved for the complex illnesses requiring special personnel, facilities, and treatment. The center would be affiliated with an acute-care hospital in its area, as well as have connections with the special units (burn unit, cardio-pulmonary unit, etc.) located in specifically-designated hospitals. For extended long-term care, nursing homes and rehabilitation centers would be utilized. Renovated hotels near the centers might be used for this purpose, although they could be employed as alcoholic and drug rehabilitation centers. The nursing homes, the rehabilitation centers, and medical hotels would undergo extensive inspection each year to ensure the quality remains high. The community health centers might be utilized by the University of California San Francisco medical students and faculty as teaching facilities with organizational ties patterned after the Denver model. As a further advantage, teaching appointments and staff privileges in the acute-care hospitals for center personnel would improve professional recruitment in the centers.

Procedures could also be established to allow for an interchange of personnel on the teams between the centers and hospitals, thereby enlarging the experience of the staffers. The knowledge gained about the bureaucracy and the problems of coordination would be invaluable to the team members having to deal continually with it (the bureaucracy that is).

Of course, this does not exclude the fact that outside personnel might have to be called in on certain cases, but the coordination of these people into the structure should not be too difficult. In the event that the centers need to refer cases to hospitals outside their area or to specialists not affiliated with the area hospital, special liaison and contract procedures could be organized.

A community mental health program would be an integral component of the health-care system, with the initial consultation and treatment facilities situated in the center. Only in severe cases would there be referral to specialists and facilities outside of the community. The mental health program would not in this manner be isolated from the other specialties and hopefully, the popular stigma associated with special mental health clinics would disappear. As explained to the patient, the health-care system in the center would be concerned with the entire individual -- his physical and mental health, as well as the effect of the environment on him. Psychiatric social workers would aid the professional staff on the community health program.

As detailed earlier, the community health center would be a part of the local civic center complex, which would house the neighborhood offices of the municipal agencies (e.g., the Department of Social Services, the sanitary inspectors, the housing inspectors, the extensions of the Mayor's office, etc.). Liaison would be established between these departments and the community health center, to ensure that if medical problems arise, precipitated in part by deficiencies in other areas (housing, social services, etc.), they could be rectified immediately. The patient would not have to travel to several locations in San Francisco to obtain aid, but would have access to city officials on a local level.

A computerized central information and retrieval system

containing the records of all the patients in the health centers should be established to provide greater availability of information on the patient to the health professional and to reduce clerical costs. The system, for which feasibility studies have already been completed in New York, would consist of a computer information system, where all records of the patient would be retained, and individual consoles for the doctor and team members. All medical, team, and hospital reports would be deposited in this central file, enabling the physician to obtain a complete record of the patient. The hospitals, in turn, would receive not only the doctor's report, but also the reports of the social workers, community health aides, etc., which would be utilized by the hospital staff. Outlets for this central file would be located only in the centers and the hospitals. To prevent the information in the files from being abused by external sources, special electronic locks or computer numbers known only by the attending physician could retrieve the information. In addition, a catalogue of all requests for information would be maintained. Nursing homes and rehabilitation centers would have access to the files with the approval of the physician.

Transportation between the centers and hospitals would be provided by the center, as would emergency service on a contract (or ownership) basis. The minibusses would operate on a regular schedule or on an on-call basis, depending on the extent of their usage, and would also be available to transport patients to the center from inaccessible areas of the neighborhood. Local staff, versed in the predominant language of the area, would be employed as personnel whenever possible. Ambulance service would continue to be available on an on-call basis.

Day-care and nursery facilities should be provided at the center to allow mothers to bring their children if they

cannot afford or cannot find a baby-sitter. Every possible means should be made to make the nurseries a congenial place, and not to frighten the mothers or the children.

The private sector would be primarily organized around group practices of specialists from an individual field or from several areas. Although the team approach would not be applicable in all cases, the Public Health Nurse and the Community Health Aide of the Comprehensive Health Program would be available for consultation in cases where the patient came from a target area. Records from the Central Information System for those patients treated at community health centers would be furnished to the private clinics and physicians upon request via the center. The private physicians could also join the data service, if they so desire. Reports from private physicians for patients under the information system would be required. The private sectors' relationship with the community health center would be, however, primarily on a consultant basis or on a diagnostic and treatment basis in the event the center is very inaccessible for the resident of the impact area.

In conjunction with the detoxification centers for alcoholics established in renovated hotels, the city could purchase several farms or workshops where the alcoholics and addicts can be taken care of while they are adjusting to a new life-style. The farms and workshops could teach these people skills needed to obtain employment and provide them with a greater sense of fulfillment. All produce and manufactured articles would be sold to the municipal agencies and then to the public and all profits would be distributed among the workers, to be spent on new clothing, room and board, etc. To avoid any complaints from the unions, the program would be explained completely and assurances would be given that these farms are not meant to provide competition, but are primarily organized for therapeutic purposes.

Although it is very difficult to estimate the costs for this health-care system, primarily because of the inflation and development of ever greater sophisticated equipment and treatment procedures, preliminary estimates reveal that an additional \$20-30 million/yr. would have to be appropriated for health services in the city budget. Based upon data given to the researchers by the Department of Health, current spending is approximately \$57 million (including the operation of the three city-owned hospitals). This includes \$2.8 million for the five existing health centers (excl. sanitary inspectors), \$5.3 million for the mental health centers, \$1.2 million for the mental health care contracted to hospitals and private clinics, \$46.7 million for the operation of the hospitals, and other miscellaneous charges. Although estimates are only tentative, the cost of each Comprehensive Care Program would be approximately \$900,000 - 1,000,000 for a 50,000 population area. A health center for a similar-sized area (but geared for 20,000 patient load private clinics would hopefully pick up the rest) would cost approximately \$1.3 million. The new proposed hospital south of Market Street would increase the expenditure by \$5-8 million for construction, as would the alcoholic and drug rehabilitation farms and centers. If the health centers are required to treat a greater load of the community, expenditures would increase accordingly. (See Table III-27 for staffing of health program.)

Table III-27  
STAFFING FOR COMPREHENSIVE HEALTH PROGRAM

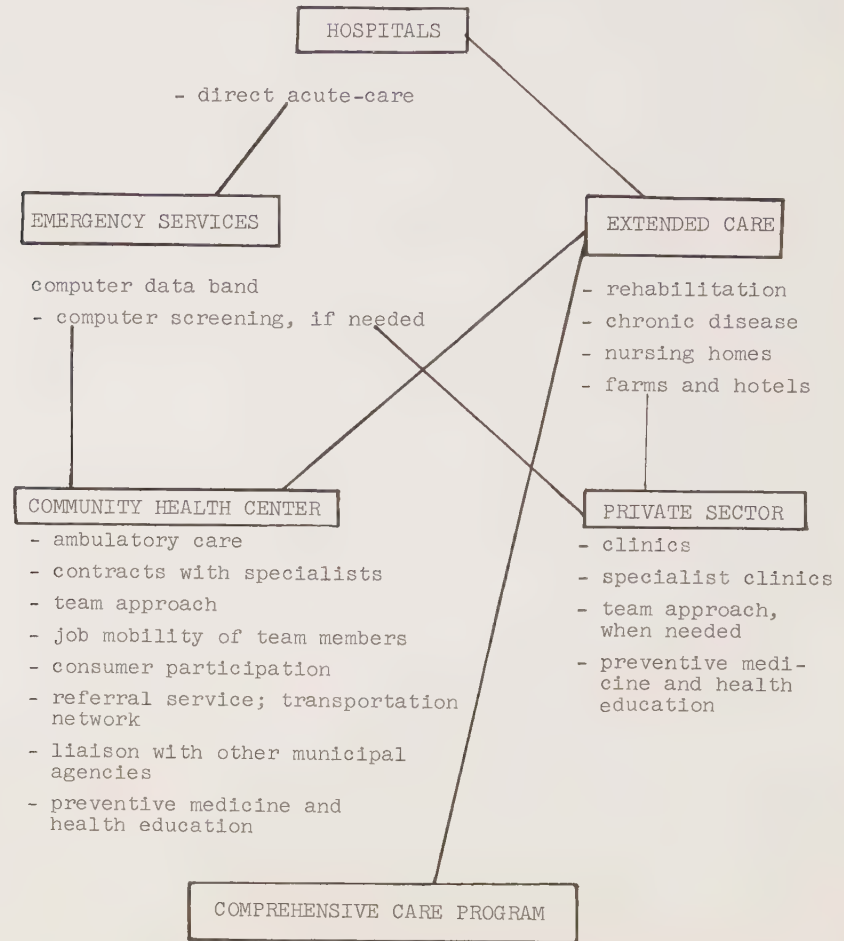
Staffing  
Comprehensive Health Program: (50,000)

- 1 Medical Doctor (Public Health)
- 3 Nurse Supervisors
- 3 Nurses (Specialists)
- 24 Public Health Nurses
- 50 Community Health Aides
- 1 Administrator
- 1 Statistician
- 1/2 Physical Therapist
- 1/2 Occupational Therapist
- 1 Sanitarian
- 1 Secretary

Community Health Center (20,000 active participants)

- 20 Physicians (1/1000)
- 16 Nurses
- 8 Laboratory Technicians
- 6 Secretaries
- 5 Psychiatrists
- 5 Psychiatric Social Workers
- 2 Psychologists
- 1 Receptionist

- intensive and post-surgical care
- special units
- halfway houses



## 2. Employment Services

### a. Social Development Center (SDC)

An ultimate program for the handling of employment institutional training would be the development of Social Development Centers. This proposal takes the following form.

The Social Development Center is an institutionalized approach designed to teach trainable people to be self sufficient. Structurally, it will be located within a slum area with ready access to a large industrial complex, schools, and churches. The complex itself will be almost completely autonomous with all living and training necessities provided for with the exception of churches and dependent schools. This environment allows for strong control over the trainee, yet it allows some interaction with the local community.

The program itself will work on two levels. First, the trainee will receive job training to allow himself to be economically dependent. Secondly, he will receive extensive psychological and social training to allow himself to adapt to a new role in society. Only with both of these objectives accomplished will the trainee be able to assume a higher station in our society.

### b. Civic Cooperation

#### i. Community Support

Community support will be needed from many aspects. First of all, the SDC program must be sold to the people of the community thru personal contact and other available communications media. For this, the active support of councilmen, policemen, social workers, teachers, clergymen, newspapers, and other public service personnel are needed. Secondly, the SDC will need inter-program support in the form of public schooling and religious services near the SDC complex. Higher quality services are desired, so

as to offer an incentive for uprooting from other areas but still avoid antagonizing other slum areas by having blatantly superior facilities. As for inferior facilities, it would be inconsistent to have parents attending a progressive institution while their children are faced with a stunted environment. A third item for community support concerns trainee housing. Public funds, by necessity, will have to support the cost of rent while the trainee is at the center. However, civic cooperation is needed to help protect the trainee's property while he is away. This will consist mostly of close police surveillance.

#### ii. Industrial Support

Industrial support is a vital factor in the success of the program. SDC will depend on industry to a greater or lesser degree for economic support, jobs for SDC graduates, technical assistance, and training support.

The advantages for industry for their economic support will be through positive propaganda about their plant, qualified workers for factory jobs, and possibly a reduction in corporate taxes. Many companies want to foster human development in various areas. In Denmark, the Carlsburg Brewing Company is a prime example. Theatre, art, and even medical institutions are supported by this company. As a result, Carlsburg enjoys the enthusiastic support of the city of Copenhagen. The SDC is designed to produce a well qualified worker. By the time he completes his training he will be definitely capable of performing work in his specialty, and he will also be indoctrinated with the right kind of attitudes toward his work. This is a distinct advantage over normal job applicants. The federal, state, and/or municipal government may be convinced to lower corporate tax rates for industries participating in the SDC program as a reciprocal measure for the industrys' financial outlay to SDC.

A most vital contribution from industry will be jobs.

The whole SDC program depends on industry making available enough jobs to accomodate the SDC graduates. The majority of SDC trainees will prepare for jobs in a miniature industry simulating the operation of a large industrial complex in the local vicinity. Extremely close ties must be maintained with this industry to ensure a stable relationship and continuing support. Every effort will have to be made to have jobs ready for the trainees in their specialty as soon as they graduate. SDC must work for as many advanced commitments from industry and small private enterprises as they can.

The major industry associated with the SDC will also be called upon for technical assistance and support training. Technical assistance will be needed in setting up the SDC mini-industry and also in organizing the course material. Training assistance will encompass guest lectures and plant visits.

c. Trainable vs. Non-Trainable

A large percentage of people today cannot be trained for an adequately remunerative job for either physical or mental or age reasons. For these persons the SDC will not apply. It is for those people who can be trained that SDC programs will be required. The problem, of course, is where you draw the line. What factors are to be considered and where are the cutoff points. I cannot pretend to be able to arrive at such decisions, but I am sure vocational experts would be able to arrive at practical criteria.

d. Curriculum

The content of SDC curriculum is divided into four basic categories:

1. Domestic training
2. Psycho-social training
3. Job training

1. Domestic training - The domestic portion of the program will center on practical household training. For the woman this will be cooking, housekeeping, and general homemaking. She will also take marriage and the family classes and participate in family counseling sessions. Single trainees will follow the job trainee program.

Informal domestic training will be lead by the floor counselors in the living quarters whenever useful.

2. Psycho-social training - Psycho-social training will be conducted via the classroom and also by counseling discussions. All trainees will participate in the different phases. Classroom training will include general sociology and general psychology. Group therapy sessions, family counseling and individual counseling will comprise the remainder of the program.

The general psychology course will be geared to the practical aspects of the subject. It should basically give the trainee an insight into why he acts the way he does. Sociology will point out to the trainee the outside social forces that he has acting on him and how these forces have affected him.

With the knowledge gained in the psychology and social courses the trainee will be better equipped to participate in the group therapy and other counseling-discussion sessions. Here in these sessions should be the crux of change. Here is the self examination, the opening of personality for probing and careful, constructive change. Other activities at the SDC merely reinforce these basic changes occurring at these sessions. It is here that we need brilliant staff personnel capable of shaping calculated changes. Hard-core professionals will be needed for much of this program; however, qualified volunteers should be used whenever possible perhaps in the classroom.

3. Job Training - Job training is a multifaceted area. Although the bulk of the job trainees will be placed in the mini-industry program, the remainder will be trained to be garage mechanics, garage attendants, custodians, security men, administrative typists and clerks, draftsmen, and other occupations. The mini-industry will be set up functionally on the lines of a large industry nearby that has pledged to support the program. The industry will advise on the physical plant at the center and also aid in developing the industrial training program. If possible the sister industry might be convinced to donate some of the expensive equipment for the plant.

The scope of the industrial program will include labor unions and corporation management as well as technical training. The trainee will then have a picture of the industrial organization, where he fits into this picture, and how he can best advance himself in such an environment. The trainee should specialize in a certain skill but should also be given experience in other jobs to help liberalize his attitudes and broaden his experience. Special lectures and real plant tours will be utilized to complement the program.

Industry jobs like other technical training positions are assigned according to the trainee preferences and the results of the Trainee Aptitude Test given the first day of the training program. The industry should be able to provide enough jobs of different difficulty to allow for the differences in abilities of the trainees.

Automotive servicemen and mechanics is another potential area for large numbers of jobs. However, in the automotive business there are only a few areas to specialize in; car mechanic, station attendant, and car serviceman. An actual station will be located in the SDC technical training area; and in addition to maintaining the training aid automobiles, the SDC buses and other vehicles will also be

maintained. The instructor(s) for this area should be easily obtained from volunteer sources. I will not attempt to outline the curriculums for the three types of jobs in this category; however, gas station attendant programs should be geared for the lower end of the trainee intelligence range, the servicemen toward the middle, and the mechanic toward the higher end.

Another large training area will be the administrative field. The single female will be trained in this area. Trainees may receive training in one or more of the following areas; typing, filing, publication, distribution, dictation, clerical work, and keypunch operation. A limited number of males will also be trained in this area. Married women will be allowed to alter their programs with the consent of their counselor to take limited portions of this course. This is a necessary measure and should be encouraged because it allows both members of the family to be capable bread winners and provides insurance should anything happen to the husband of the family. It is also important not to overemphasize this factor because the wife and mother have full time responsibilities in the home. The SDC does provide the wife an opportunity that she would not ordinarily have; but, even so, she must be a capable and industrious woman to meet both her domestic training and job training standards at SDC.

Other possible areas of job training include: security guard, draftsman, welder, carpenter, plumber, construction worker, and vehicle operator. Any specialized field should have a large enough potential job market in the immediate area for a period of years to ensure that expensive programs are not abandoned and/or trainees are not denied adequate jobs. The number of areas in addition to three main job areas will be limited due to ceilings on SDC staff personnel and to expenses involved in setting up such programs.

e. Post-Training Follow-up

By the time a trainee finishes his six months at the center, he should be a relatively stable, self sufficient individual. However, for many this new personality represents a significant change in a very short time span. This presents a distinct problem to prevent the individual from reverting back to his old personality habits. The program is geared to mold a new personality, nurture it, then gradually allow it to exist by itself. This concept is realistic within the confines of the center. But to effect a permanent enough nouveau-personality to stand up to real world environment is much more difficult. Therefore, it is necessary to provide, as much as possible, positive reinforcement for the trainee in his real world environment. It must be realized that returning to the social pressure of his old environment will reinforce his former personality in more ways than his new one. His thinking will be alien to his old relationships. And there will be a strong force pulling the individual into old habits such as group pressure and conditioned response.

There are several ways that the SDC can help in this area. First, by periodic interviews with the trainee to reassure him of what his best self is and how to direct his life toward that self. These interviews on a more practical level can help the graduate solve some of the problems that he is coping with. Community workers and responsible citizens should actively seek out SDC graduates and try to form friendly relationships. Industry too, plays an important part by taking a personal interest in the SDC graduate. They can encourage him to actively participate in union activities and also befriend fellow workers of stable, positive character. Probably the most important influence of the SDC graduate to befriend the kind of individual who will help him keep on a socially healthy, self sufficient path.

The strength of the positive reinforcement must be strongest immediately following graduation. Then the coercive influence will gradually be reduced until the individual is considered solidly reformed at which point the SDC will sever formal relations.

f. Other Recommendations

If the SDC concept is not adopted the following recommendations are proposed:

1. Provide full-term training based on an individual's need to prepare himself for a productive position. Coordination with private industry should be maintained so that professional or semi-professional training can be contracted. The San Francisco Civil Service Commission has a program to prepare disadvantaged people with training for semi-professional positions such as social workers, etc. This type of program should be adopted by other public and private agencies.

2. Establish child-care facilities near the training facilities. Since these will probably be disadvantaged children, more than regular custodian care should be provided to avoid subsequent training of these youth.

3. Establish an agency which could be responsible for all the programs with unilateral funding. Placement should be made on the basis of the need of the individual rather than on a quota system. Employment services should be provided for all who need them.

4. Adequate training should be provided to those who have difficulty with the English language. A concerted effort should be made to reach the Spanish-speaking and Chinese-speaking members of the community. As an example, we present a case involving a family in Chinatown who migrated to San Francisco from Hong Kong. In Hong Kong the father was a successful physician, but is now a low-level clerk. The father is prohibited from

taking medical examinations in English, and must work full time just to support his family. Teaching English to people such as the Chinese doctor would provide the community with skilled technicians.

5. The quota allocated for the Work Incentive Program must be increased to handle all of the welfare recipients who are eligible for such services. This program should be available to all welfare recipients so long as they are trainable.

6. Methods must be used to approach and motivate disadvantaged unemployed workers. It is important that a willingness to hold employment be included as part of an employment service training/educational program.

7. The Community Services community service complex has been recommended. Employment Service testing and interviewing should be conducted in these complexes to provide the full range of services. Special individual problems could be communicated to service or health workers to assist serving a persons social and/or health needs.

8. Employment service agencies must secure the cooperation of industry and business to determine prime areas of current and projected employment demands. Cooperation is necessary to place graduates and trainees in jobs that are of high caliber. It is simply not feasible to train people for occupations which are not available.

Little progress can be made until the employment problem is recognized on the scale which it actually exists. Benefits exceeding cost of employment training are actually derived by making people productive members of society. A major barrier to the success of employment programs has been the lack of funds. To accomplish an effective employment program we must have unilateral funding and control of the employment programs.

### 3. Department of Social Services

#### a. Preventing Welfare Dependency

The department of Social Services should work with the local educational systems to insure that additional emphasis on vocationally and occupational oriented education be given students from troubled families. By working with the educational systems the Department of Social Services should provide job training opportunities while giving students the opportunity to do clerical, keypunch, and other occupational activities.

Implementation of this cooperative venture should begin immediately. Summer employment commensurate with the students' abilities would be provided during the summer months.

#### b. Rehabilitative Work for Aged in Care Homes

During several visits to homes for the aged, the impression was gained that many of the elderly people were becoming "vegetables" and were simply sitting around awaiting death. It is felt that simple, rehabilitative assembly line or piece work could be provided to the aged on a voluntary basis to give them something to do. Such a program could be patterned after the program apparently being used by the blind. Not only would this type of rehabilitative work provide the aged with something to pass the time, any income from the sale of their products could be used to assist in their maintenance. A canteen fund could be established in each nursing home so that residents could afford some of the luxuries of life. We would like to see a test trial of this suggestion coordinated by the Department of Social Services. If effective, the Department of Social Services should institute and continue to coordinate this program in homes for the aged.

This program should be started as soon as personnel is available to organize and control the work group. If this type of activity proves to be socially desirable, then elderly

people residing in a private home could be induced to participate on a piece work basis. Added attractiveness is necessary for a care home to act as an incentive so that the aged have no qualms about entering the nursing home.

c. Training Program for Staff

It is recommended that the Department of Social Services immediately prepare a formal training program of sufficient length and subject matter to adequately train new technicians beginning their employment in the Department or are changing jobs by virtue of promotion or reassignment to a new position.

To assist in the area of employing the hard core unemployed it is recommended that the Department of Social Services employ and train personnel from areas identified as having a preponderant number of people requiring social services. By employing and training such personnel who would work as social workers, the Department of Social Services could avail themselves to the persons knowledge of the area and these people would probably be more readily accepted by members of that community. Such a person would have advantages because of his personal contacts in the area and would be better equipped to visit many homes and assist those people in matters in matters of money management, family training, etc. Language barriers could be broken by these area personnel who would be assumed to understand foreign languages spoken predominantly in certain specified areas, such as Chinatown, the Spanish speaking community in Mission, etc.

The employment and training of area personnel should be timed to coincide with the implementation of the decentralization strategy presented below.

i. Payments

Standards of financial assistance should be

brought up-to-date and assistance grants for all categories should be made sufficient to assure a minimum level of decent subsistence. More adequate levels of assistance have been found to reduce the incidence of health problems caused by malnutrition and the psychiatric problems growing out of long-term, serious depravation.

ii. Emergency Services

It is recommended that money, food-stuffs, and rent orders be given to all of the people who indicate an urgent need for these commodities. Recoupment of any overpayment can be started at a later date if necessary. Provision should also be made so that enough money is maintained in the emergency housing fund so people can be provided with adequate housing.

d. Chinatown and Mission District

Lack of language skills is a barrier to understanding welfare procedures. Fear of being deported and prior experience with other governments creates a feeling of concern among the people of Chinatown. To adequately serve the needs of Mission District and Chinatown residents it is recommended that at least 10 bilingual service workers be assigned to each of these areas. A drawback to this proposal is the unavailability of bilingual service workers.

An alternate solution would be to use bilingual community aids who are trained to the extent of assisting families in securing benefits to which they are eligible. (See section on Dial-for-Help on the following pages.)

Concentration of social services should be focussed on the youth of Chinatown, some of whom are kicked out of the family because of the practice of ostracism. These youth lack education and become unemployed or marginally employed.

The need for child-care facilities is evident in both areas because often both parents are employed, but the family income is still quite low.

e. Social Services

There is a definite need for services beyond the fiscal assistance. A preponderance of evidence indicates families tend to deteriorate after they become dependent. This conclusion added to the premise that a majority of the welfare clientele are in need of social services indicates a real need for social services.

Social Services in this context may be considered to be any purposeful activity that is directed toward helping families and individuals to improve their health, psychological, financial, and social circumstances with the objectives of preventing further dependency, strengthening family life, protecting the welfare of children, and enabling families and individuals to attain personal and economic independence.

An effective Social Services program has as its core social casework services. These include as direct services for rich and poor: identifying the social, psychological, and health problems and its causes; helping the client recognize family strengths and resources for coping with them; helping to adjust attitudes when necessary; helping to understand and make use of the community resources available; and motivating the client toward self-support, self-care, or better family or other interpersonal relationships. It may also include helping mothers who wish to work, but who should remain home to care for their children, accept continued assistance and use it constructively.

Social Services should also include referrals to and from psychological, health, psychiatric, nursing, housing, recreation, day-care, employment, homemaker, educational, and legal services.

f. Decentralization

It is recommended that the Department of Social Services decentralize its operation and establish district

offices throughout the area which would be responsible for dealing with the social needs of their community.

The process of decentralization should begin in about two years (1972) and continue for about five years until about 14 district offices have been established. These offices should be located in a neighborhood community center where all community services are available.

On an immediate basis, however, personnel should be shifted so that any service can be obtained by going to one location without referral to another building.

Of course the reason for decentralization is to provide services which can be easily reached by any person residing in any neighborhood within the city of San Francisco. Information concerning this decentralization and a reorganization will follow.

g. Reorganization

Assuming that the Department of Social Services will lose its responsibility for welfare payments we recommend, the following organizational structure.

Separation between central and area office structures is indicated on the organizational chart (Fig. F-3) by a dotted line.

The reorganization is designed to eliminate the present dependence of services by type of program, e.g., to provide the full range of services at any office. In terms of staff development, work in the expanded areas should prevent boredom which can be associated with specialized tasks. The divisions would function as follows:

Administrative Services - Responsible for the "house-keeping" duties, e.g., supply and procurement of supplies and equipment. Included are the necessary functions involved with the accounting and budget aspects of an organization.

Personnel and Training - Primary functions of this

organizational entity is to recruit, and otherwise handle employee personnel problems. The Staff Development Division will be responsible for giving or coordinating in-house training. Induction and classroom formal training would be the responsibility of the training division.

Quality Control and Analysis - It is anticipated that this group would perform a sample quality review to detect problem situations which may require additional "on-the-job" training, etc. The Program Policy and Procedure Division should write manual additions and changes, prepare required work plans and generally be a staff arm of the General Manager. (This is currently being done.)

Apparently, little attention toward short-range and long-range planning has actually been performed by the Department of Social Services. Most of the reports which analyzed the Welfare problem have concluded that planning on the state and national level are very ineffective, or even nonexistent. It is anticipated that this group would serve as a model group to demonstrate the results which can be accomplished through systematic analysis.

Operating Programs - At the centralized level, the Director has responsibility for the divisions dealing with special programs, EDP coordination and review of appeal cases. The key to the organization centers around the area offices. The personnel of these offices and new positions are as follows:

- a. Field Worker - A duty of this person should be to solicit speeches and appear before groups to present an understanding as to what services are available. Salient areas for presenting talks appear to be nursing homes, schools, private service organizations, etc. A person holding this position would also be responsible for advertising the services that are available by preparing human interest

stories for local publications (clearance of the area office supervisor would, of course, be necessary).

Complicated home contracts would also be a duty of this individual who will be classified as a social worker. Establishing booths in neighborhoods to solicit those in need of social services when the occasions arise would be a specific duty.

This person should maintain a working relationship within the district. He should stop at nursing homes, private service organizations, etc. periodically to make public relations visits to keep abreast of current events.

Under the present organizational structure personnel in the Division of Community Services visit various communities. A weekly report by memorandum is prepared and distributed to the community group involved and to personnel in the Department of Social Services.

During the fiscal year 1968-69 these people gave talks before 2,000 people in 132 sessions. They do not actively solicit talks however. The number of people reached by field workers should far exceed this number to make the communities aware of the services available. Since the Department of Social Services will not be responsible for grants in aid, advertisement of their services will be of a greater necessity.

- b. Service Workers (Jr. & Sr.) - The division of duties between Jr. and Sr. workers should be based on difficulty and the sensitivity of a case. Separation of duties would also assist in the promotional ladder incentive by placing one more "step" in the promotional "ladder".

Eligibility Clerks will not be needed and could fill the Jr. positions. These workers must be trained so they recognize what services are needed. Because of backlogs and the existing pressure of urgent work, it was observed that service workers often overlook problems, such as need for money-management training.

- c. Expediter, Housing Coordinator - Each area office should provide a person capable of handling an emergency fund sufficient to aid those who need immediate assistance. As previously indicated the one criteria should be need, even though some erroneous payments might result. This individual must also keep abreast of available housing in the area.

Under the present organizational structure, a Housing Coordinator performs the function of locating emergency housing as previously described.

An automated billing procedure to the Federal Agency handling payments on a periodic basis would maintain this fund. These funds could be deducted from the recipients checks.

Reorganization of the Department of Social Services should begin when the pending legislation concerning a guaranteed minimum income is effectuated. Decentralization will not require any significant change in the number of personnel. Cost of additional housing will be defrayed partially since the Department of Social Services is currently housed in five buildings.

- h. Dial-for-Help

Many cities have instituted a program where a person in need of assistance can dial a simple telephone number to discuss his problem with a social worker. The social worker maintains a registrar of public and private groups and

assists the caller in locating the service he needs. Rather than to rely on the caller, it is the social workers responsibility to make the necessary contacts and arrangements. If no service is available for the type of need, a report is prepared to request revisions or additions to current programs. We view the service workers as providing this service for San Francisco as well as the functions listed under Social Services above.

Some of the Dial-for-Help agencies employ neighborhood aids who are residents of the neighborhood on a full or part-time basis working in the area in which they live. These people assist those who are afraid or unable to contact public agencies. These neighborhood aids are able to calm these fears and put the people in contact with the agency supplying the service or the social worker in complicated situations. Use of bilingual neighborhood aids in the Spanish-speaking neighborhoods of Mission and Chinatown would be beneficial.

i. Neighborhood Community Center

We expect that the neighborhood community center district offices of the Department of Social Services would employ about 30 Jr. Service Workers and about 15 Sr. Service Workers. These people will be responsible for such duties as Dial-for-Help service, serve as representative payees for incompetent welfare and/or Social Security clients, plus provide the full range of social services previously described. At least 2 or 3 service workers will work with the local health office to provide social services for those needing it as identified by the clinic. We recommend that close coordination be maintained with the employment service people to be aware of any assistance which they can provide to that organization.

An alternate proposal to coordination with the employment service would be to incorporate the employment training/education programs into the Department of Social Services.

Duplication of case files would be eliminated and the employment training/education programs would have a local flavor.

#### 4. Law Enforcement

##### a. Recommendations for Police Programs

Repeatedly in this report and in the Phase I and Phase II reports which preceeded it, references have been made to the lack of community support for the police and the need for more use of modern technology by the police department. These are not unrelated problems. The principal reason for the failure to incorporate modern technology into the police department is lack of funds. The lack of funds reflects the lack of community support. The lack of community support for the police was graphically illustrated in the June, 1970 primary election. Proposition I, which was heavily supported by the police department was defeated by a 3 to 1 margin. While it is true that propositions requiring increased tax outlays were generally defeated, the other money propositions were defeated by much smaller margins.

Thus, it is clear that to update police operations technologically, the police-community interface must be improved. Note that the term interface is used, not police-community relations. This is to indicate that the process is one of joining the police and the community in a common effort to reduce crime. Previous attempts have been in the direction of creating community relations officers which -- being largely a political creation of the mayor -- have been unable to unite community leaders and the police in a joint effort to make San Francisco a safe city.

The creation of this interface requires a two-prong effort, both efforts proceeding together. The police must become more effective in order to gain support for the police programs. The community must begin to actively support the police. Presently citizens do not feel they are receiving adequate police protection. This feeling is well supported by the available statistics. Therefore, the first

section will deal with methods of improving efficiency. The second part will deal with methods of creating a community-police interface. Some of the proposals contradict each other since the goals of efficiency and close community interface create requirements for different modes of police operations. The goal of efficiency requires centralized single-function units within the police for while the goal of close community involvement leads to a decentralized role for the police. However, the joint goals are not mutually exclusive and it is possible to shift emphasis from one to the other. It may be that at one time or place, efficiency may be the more desirable and at another community, interface will take precedence.

#### b. Improving Police Operations

Police operations are defined and limited by organizational policies, available resources, and community attitudes. The formal organization must be so constituted as to effectively implement the chosen policies of the department and to use the total resources available in the best manner. A reorganization of the department is closely tied with establishment of a new policy which would take into account the questions of whether 1) the police department can be so established as to serve the needs and requirements of the people, and 2) whether the police department can deal with prevention of crime. Such a new direction is felt to be a necessary way for proceeding through to the end of this century.

##### 1. Police Reorganization

The first step in establishing this new direction is the formulation of policies. This task requires the development of a systematic process by which important issues are identified, studied, and resolved. The "planning and research" unit should be given the manpower and responsibility for the continual review of practices and formulation of

policies relating to the crime control and crime prevention functions. The creation of a research staff should utilize the special knowledge of experienced police officers, urban sociologists, and legal advisors. The total policy effort is shown in Fig. III-22. Flexibility is a major objective in the formulation of policy since over a period of time it is possible to make a more comprehensive review of basic problems and situations than was possible at the time the policy was first formulated. Figure III-23 suggests an organizational form for the police department. Sound management techniques within this organization structure will make it possible for department heads to exercise control over the entire police operation. The chain of command will be identifiable and supervision up to par. This type of organization along with strong administration will make it possible to reduce the number of police districts and will reduce the diversion of police personnel to special or administrative assignments, thereby increasing the number of men available for the street operations of the patrol division.

The reorganized department could then focus on mobilizing to meet the needs and requirements of the people to improve apprehension of criminals, and to concentrate on the prevention of crime. Police response to crime is initiated by one of two methods - police detection or citizen detection. The types of crime prevalent in the city are those which are citizen detected; for instance, automobile theft, assault, robbery, rape, burglary, and murder are more frequently reported than are observed by police on patrol. The police are as a consequence organized to react to citizen complaints and employ primarily a reactive strategy and tactic. Effective response to this mode, the prevalent one in the city, establishes the requirement for a command and control center in the communications bureau, and a dynamic resource allocation and deployment technique that would allow distribution

## Formulation and Execution of Police Policy

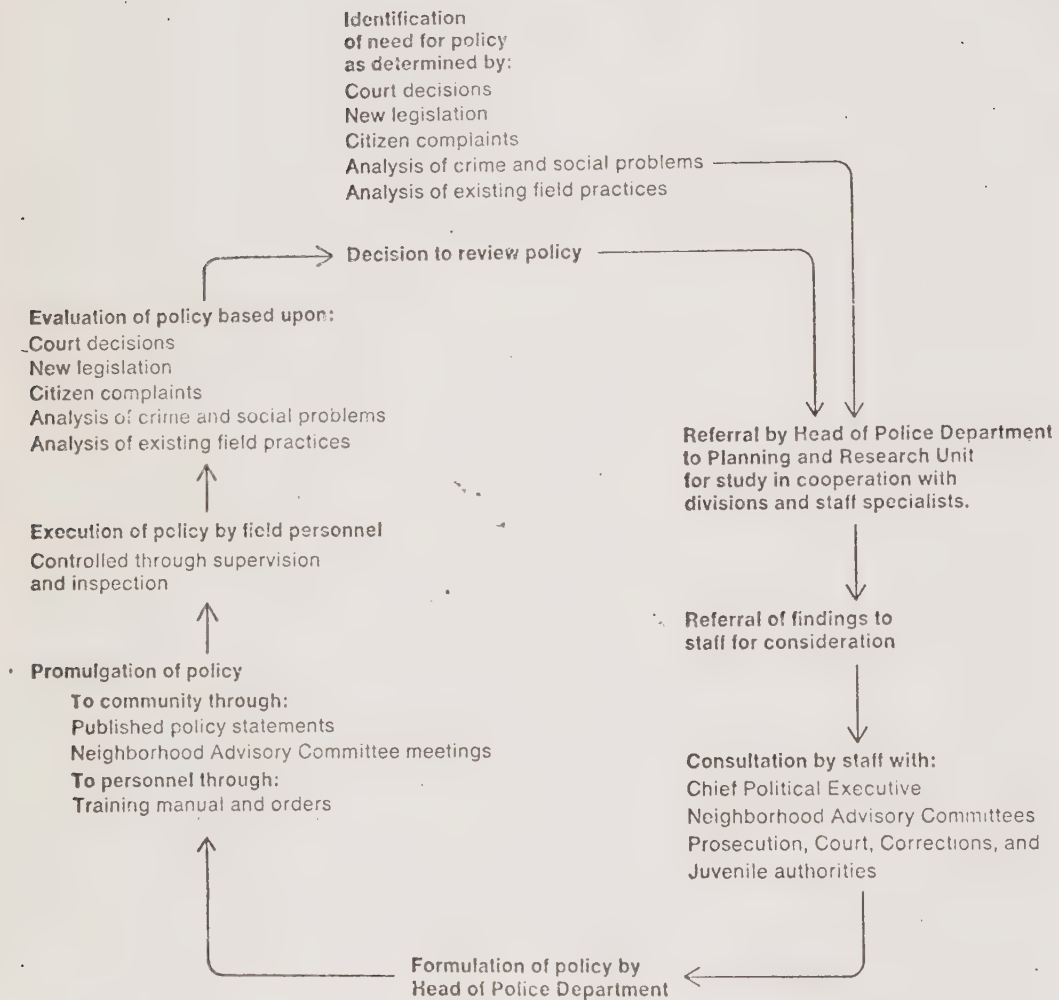


Figure III-22. FORMULATION AND EXECUTION OF POLICE POLICY

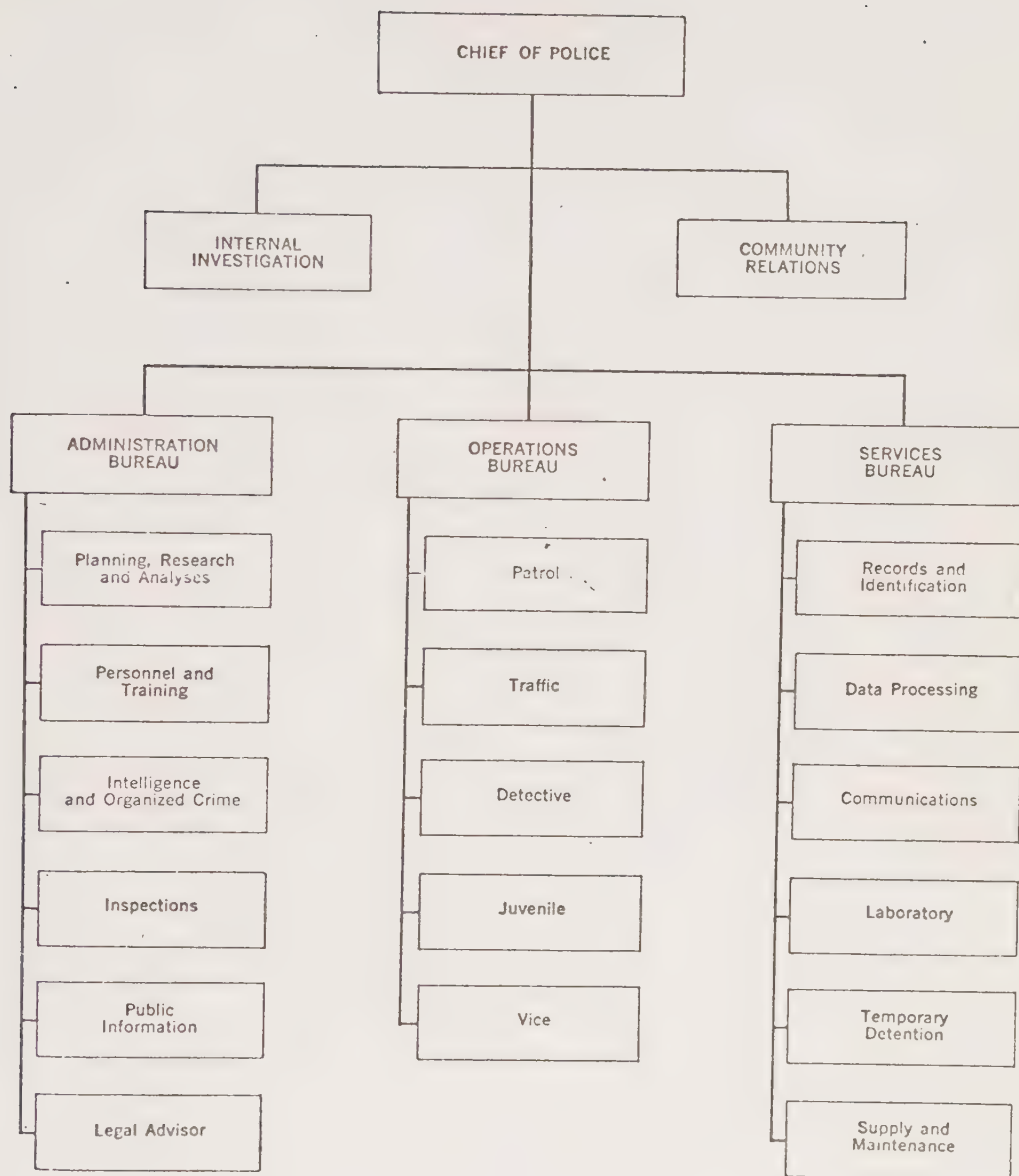


Figure III-23. ORGANIZATIONAL FORM OF POLICE DEPARTMENT

of manpower over the different areas based on the frequency of citizen calls according to a temporal and spatial pattern of crime reported.

ii. Technological Innovations

The technology now available for application in three major areas of police operations -- records, communications, and planning. Recommended improvements for San Francisco include a modern information system, a command and control system, and better radio communications. The computer based information system should include the following functions:

- \* Manpower deployment programs for day to day operations.
- \* Resource allocation for total department budgeting.
- \* Central "wanted" file for police patrol
- \* Management analysis
- \* Court case summaries
- \* Storage, retrieval, and maintenance of records.

A major need of the department is to upgrade the command and control operations with new equipment and facilities. A computer assisted command and control system could be installed in the base station to significantly increase the response to a citizens call for service by reducing the total communications center delay. It would also make possible changes in hour by hour deployment as the crime pattern or personnel staffing changes. A detailed description of the command and control system is included in the Appendix.

Even more urgently needed is a basic reexamination of the police command and control functions in patrol operations. Current operational procedures are not conducive to adequate control measures. While control measures are possible to implement without technological aids, the automated system allows very flexible monitoring capabilities. The location

# A Possible Computer-Assisted Police Command-Control System.

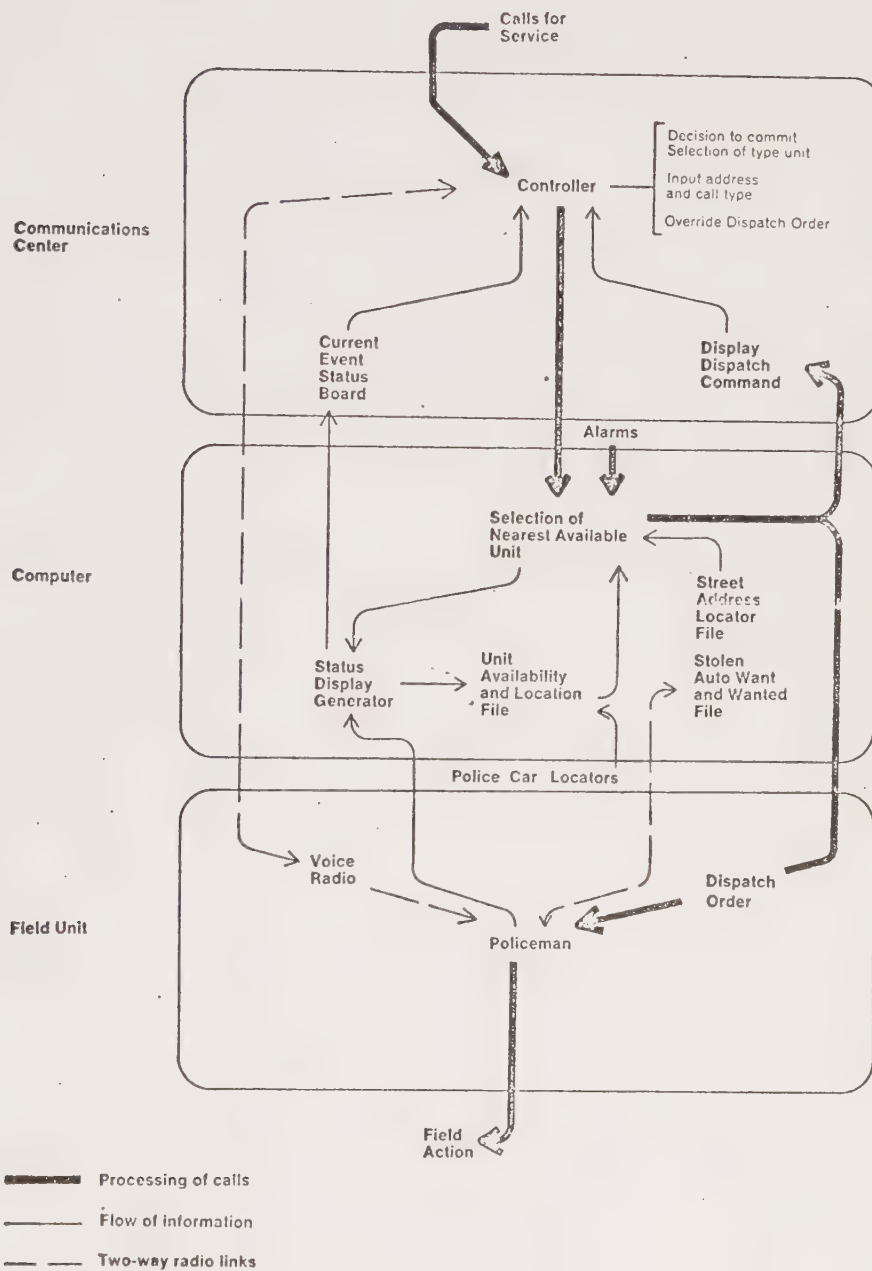


Figure III-24. A POSSIBLE COMPUTER-ASSISTED POLICE COMMAND-CONTROL SYSTEM

and activities of any unit can be checked spontaneously. Records from the daily log are so easily retrievable that discrepancies between police and lay accounts of an incident should be quickly investigated.

While development systems such as command and control greatly improve the response capability of police and thus cause opponents of the police to cry "Big Brother", the inherent monitoring capabilities provide a check against the tendency of some police recruits to let their conception of authority get out of hand. If the ordinary patrolman is made well aware of the spot-check capability of monitoring, he will be less likely to provoke incidents by harassment or to spend an inordinate amount of patrol time in favored locations.

In the case of communications, a walkie-talkie system could be developed that would keep the patrolman in constant contact with supervisors for effective deployment and personal safety. New devices are available for patrol cars which allow license plate checks by the officer to the automobile statistics files in Sacramento which will help in the stolen car problem.

### iii. Conventional Equipment

More police vehicles should be purchased to increase the effectiveness of the patrol division. A fully equipped vehicle with radio gear costs approximately \$5,000. A twenty-four hour shift of patrolmen costs the city \$120,000. The estimate from field officers is that use of a car increases a patrolmans effectiveness by a factor of 6. Also, it appears that one man patrol cars can be used to good purpose for patrol with prior training and procedure.

It is apparent from our presentation of the tradition locked department organization flow that the police department should embark on an aggressive plan of evaluation of its own internal operation and as a base minimum a

construction and maintenance of a written, updated policies and procedures. This function could be adequately performed with a properly staffed planning and research department. A major benefit to the department would be the ability to present more conclusive proof during budget negotiations to substantiate the increase in funding required in the needy areas, such as equipment.

c. Police Community Interface

i. General Recommendation

The first step in creating true police community interface is for the police at the line management level and the community at the organizational management level to begin to actively work together for the common good of the city. This requires a selfless philosophy which is presently sadly lacking on both sides. If, however, both groups truly desire to halt the decline of the city toward a vast slum, they must work together. The present effort at Hunter's Point to create a racially and economically integrated housing group cannot succeed unless the safety of the prospective tenants can be guaranteed. Middle class white Americans -- or for that matter, middle class black, brown, or yellow Americans -- will not by choice live in an area where they feel they and their children are unsafe.

Some communities have turned to the formation of area resident patrols to provide protection. This usually works well during a crisis. Youths are involved who would otherwise be creating trouble; area residents do not seem to resent the groups as they do police; and a large number of men can quickly be gathered. This is not, however, an adequate long term solution. Without the clear crisis and danger, the patrols soon disintegrate and day to day crimes are not reduced. In addition, abuses may often occur because bully type people can easily integrate themselves into such a group. Therefore, the community leaders must assume

the responsibility of creating support for the police.

Concurrently, the police must involve themselves with the community. This must be more than the present day lip service attempt. The creation of a community relations group within the police force is not sufficient to develop good police-community relations. The patrolmen feel that certain officers have been given soft jobs and tend to resent the community relations personnel. The ghetto residents view the community relations personnel and the regular police force separately. Therefore, although they may develop good relations with the community relations personnel, there is no spill-over of good will to the ordinary patrolmen. The interdepartmental rivalry is apparent to the community. Presently the community relations section is not considered an actual part of the police force. In conversations with working level police officers it was apparent that they did not consider the patrolmen in the community relations section as working policemen (although this was never explicitly stated). Historically, the unit was apparently created in response to political pressure and has had continuous problems in communicating with the remainder of the police department. Considering that it has been almost ten years since the initiation of this unit, results should be visible by now. There are many indications that the unit is highly regarded in ghetto areas and that the officers have indeed gained acceptance by the youth. However, the goal of reducing community hostility to the police is not being met.

#### ii. Specific Proposals

Obviously, there is no great rush by either the police or the community leaders to implement a true community interface program. In order for such a program to succeed, there must be drastic changes in both the police and the community leaders. Pressure must be exerted upon both sides. The ever rising trend in crimes must almost certainly

result in pressure from the community at large, but this pressure must be channeled if positive effects are to be gained. From discussions with community groups, it appears that there are some responsible leaders who would cooperate if they were assured that the line police would actually push such a program.

There are several methods to exert pressure on the police force. For example, allowing non-police to participate in the police decision process in the form of a civilian review board has often been suggested. However, given the present state of police morale and the present difficulty the police department is experiencing in controlling the force, it does not appear wise to introduce a further fragmentation of authority. Instead, a tighter actual police management control should be introduced initially. This would be accomplished by giving precinct captains increased authority and holding them responsible for their districts. Presently men are shifted to new programs such as the scooter patrol or riot conditions without the concurrence of their precinct captain. Narcotics, community relations, and vice officers operate in their areas but are not under their control. If the precinct captain had full control in his area, he could then reasonably be held responsible for poor police work including poor community relations. If it were clear that he would not continue to be a precinct captain but would be a beat cop if he could not meet the community needs, he would be motivated to require that good community relations between the police and the ghetto residents become a fact.

### iii. Motivating Patrolmen to Care

A second approach to creating a good police-community interface is to help the patrolmen to become involved with the community. The goal is to make the people in the community important to the patrolmen, thereby involving him with their interests. The officers who are in the community

relations unit almost invariably become involved in community problems and have good relationships with most of the residents. During interviews with members of community groups, the community relations unit was repeatedly praised. In fact, the statement was made several times "we won't let the pigs on our turf, if there is trouble we call the community relations people but the pigs don't come on our turf!". Yet the community relations personnel was drawn from the regular police force. Possibly the type of individual was selected who has empathy with minority residents but it appears that the community relations unit members were initially representative of the general police force. Why is it then that they have created such a different image from the regular patrolmen, in some cases becoming champions of the ghetto residents and even occasionally opposing the actions of regular police personnel? It is because the nature of their job and their segregated situation within the police force has broken them loose from the group and allowed them to create good relationships with community residents.

#### iv. Civilian Review Board

It is apparent that the patrolmen as well as the ordinary citizens consider the police a closed group, separate from the rest of society. The reactions of society and police experience tend to reinforce this attitude. Examples to illustrate this are legion. When a Negro truck driver was shot by an off-duty police officer, the initial response was to arrest the witnesses. When a KQED reporter was roughly treated during a demonstration, the police report concluded that no rough treatment had occurred and that the police officers response was justified due to the foul language of the reporter. This was in conflict with the statements of five reputable witnesses including an assistant of the mayor. Thus it is obvious that the police force, as it presently operates, is a closed group which protects fellow

officers under virtually all circumstances. Many times it is suggested that civilian review boards be created or that officers be disciplined by some group not connected with the police. However, any such suggestion only reinforces the group attitudes and bonds the police officers closer together. Police punishment methods have never worked. In order to change police practices, police attitudes must be changed.

The most effective method of creating this involvement is to make policemen part of the community, part of the educational system, part of the health system, and part of the social work system. It must be emphasized that this concept will preempt a considerable portion of police time and will also require more highly trained and educated patrolmen.

#### v. Police as Educators

In the Los Angeles Sheriffs Department, police officers teach in the school classrooms part or full time. Bonds between police officers and students are created which involve the officers with students and students with law officers. Students also can participate in programs where they ride in police cars and actually observe policemen at work.\* In contrast, the San Francisco police department yearly sends officers into the schools to deliver a short talk on becoming a policeman. The most pertinent comment on this is that of a young Mexican gang leader in the Mission area - "Oh yeah, they send this guy in, he talk about becoming a cop. He say you have to be 5' 8" and speak good English and pass this test. Hell, I don't know no one like that. Besides, who'd want to become a pig anyway." Obviously if a police officer is to teach in high school or junior high he must have more than a high school education. How-

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\* Student and the Law, Los Angeles County Sheriff's Department.

ever a college graduate who is given special training could teach a high school course in civics or social studies. These police officers would be almost forced to identify with their students and would undoubtedly be much less apt to use physical harassment on youths.

vi. Police as Health and Safety Officers

A second method of involving the police in the community is to redefine a portion of their role to be that of protecting the poor and uneducated from abuse by landlords. The comment was made to us that, "the police will shoot a kid for stealing a lousy five bucks from a store but a landlord can let the furnace go out, five people catch pneumonia and die and they don't do nothin." A letter which formalizes this complaint is contained in Appendix III-2. Essentially this is true, but there have been instances where the police harassed the city inspectors into checking on building code violations. If the police undertook the function of enforcing building codes the following results seem indicated: (1) an image of the police as a protector would be fostered among minorities and the poor, (2) hopefully the police would be considerably more efficient and strict than the city inspectors and would eliminate hazardous conditions and thereby alleviate many of the housing problems, (3) the police would see ghetto residents as victims rather than lawbreakers, and (4) the police would meet ghetto residents on a new basis and become aware of their problems. It is hoped that a feeling of relating to ghetto residents would be generated and the police would feel themselves to be a part of the community. It would be necessary however for police to actively enforce the codes to generate these effects.

vii. Police as Parole Officers

Presently the State Board of Corrections maintains parole officers who monitor the actions of released convicts in the community. The San Francisco Sheriff's

Department has one or two men who help prisoners obtain jobs and try to help prisoners with personal problems. One of the key areas in crime prevention is reducing recidivism. The current efforts are not sufficiently successful in this area. There is no panacea for recidivism but using police officers as part-time parole officers would be a foreward step. First, police officers are aware of the problems in the areaa and have a feel of the community which would help them to spot incipient problems of parolees. Secondly, their role as parole officers would force the patrolment to regard lawbreakers as persons rather than as stereotypes. Finally, the patrolmen would see the problems which are faced by excons and presumably develop a better attitude toward them. In their new role as parole officers the patrolmen would also work with prisoners in the county jail prior to release to help them solve the problems which caused their offenses. Here again a more highly trained police officer is needed. The officers who undertake this parole agent function would need training in social work or perhaps psychology. This could be accomplished either by recruiting this type of individual or by intensive training after joining the force.

#### viii. Police as Recreational Officers

Police presently function as recreational officers through the PAL program. However, our conversations with Mission, Hunter's Point, Western Addition, and Sunnydale have indicated that the present program does not create good community relations for the police. It appears that above age twelve there is little interest in sports programs among the young men. Thus at the age where criminal involvement usually begins, friendly contact with the police is lost. The most compelling interests seem to be automobiles and dances. The police would get more return on their time and money investment if they sponsored drag

races, auto mechanic class, NRA rifle clubs, and dances. Although there is much public resistance to some of these activities, these are the activities which teenagers are interested in. Members of a girls club commented on the heavy attendance at their dances where records were played and soft drinks sold even though an admission charge was made.

These recommendations will require a larger police force, and police with more specialized training. A greater effort to hire officers with more empathy for the community should be made.

d. Better Policemen

A greater effort should be made to hire policemen from Negro and other minority groups. The hiring practices of the police department are not discriminatory, however the low education level and juvenile arrest history of many Negroes prevent them from serving on the police force. The requirements should be carefully reviewed with the thought of eliminating any unnecessary requirements. A work-study method of entry should also be initiated. The police cadet program should be expanded. It appears that if police duties were separated into classes, the requirements could be less stringent for some classes.

The average three month period through the civil service system must be shortened to reduce the very high minority drop out rate of people who cannot go unemployed for that long a period of time. The department should also recruit in the colleges which will work towards the aim of promoting all personnel with general enforcement power have baccalaureate degrees.

Recruitment of these different types of people could fit in with a redefinition of basic police functions which would be divided among three kinds of officers, the "community service officer," the "police affair" and "police agent".

(See Fig. III-25).

At present all entry into the police force is at the same level. Provision for entry at higher levels should be made. The only area of the police force where selection is somewhat arbitrary is the promotion to inspector rank. Formerly this was used to promote "heroic action," it is presently being used in some cases to promote Negroes to higher positions without the necessity of them passing tests. The inspector rank or "police agent" should be the most trained, highly educated group in the police force. This area appears to be a natural one for entry of college trained personnel.

There should be considerable more training in control and tactics for controlling demonstrations. Particular emphasis should be on non-violent means of control. With the present political climate it is vitally necessary that police have expertise in this area. The impact on police community interface has been unfavorable for both sides due to improper training.

e. Conclusion

The foregoing recommendations will require a major restructuring of the police department. It will be difficult to realign the police force toward these new goals. Many of the long term officers will experience great difficulty in redefining their roles and remodeling their operational methods. A great deal of training will be necessary. It would also be desirable to initiate an early retirement program so that the officers who are unable to adjust can leave rather than be forced to stay and create a constant problem. It would also be helpful to reduce the advantage of seniority in promotions. Presently, too much weight is given to length of service in promotional areas. Reducing this weight would allow capable individuals to rise faster and thus they would be more likely to remain on the police force.

# Career Development and Educational Standards

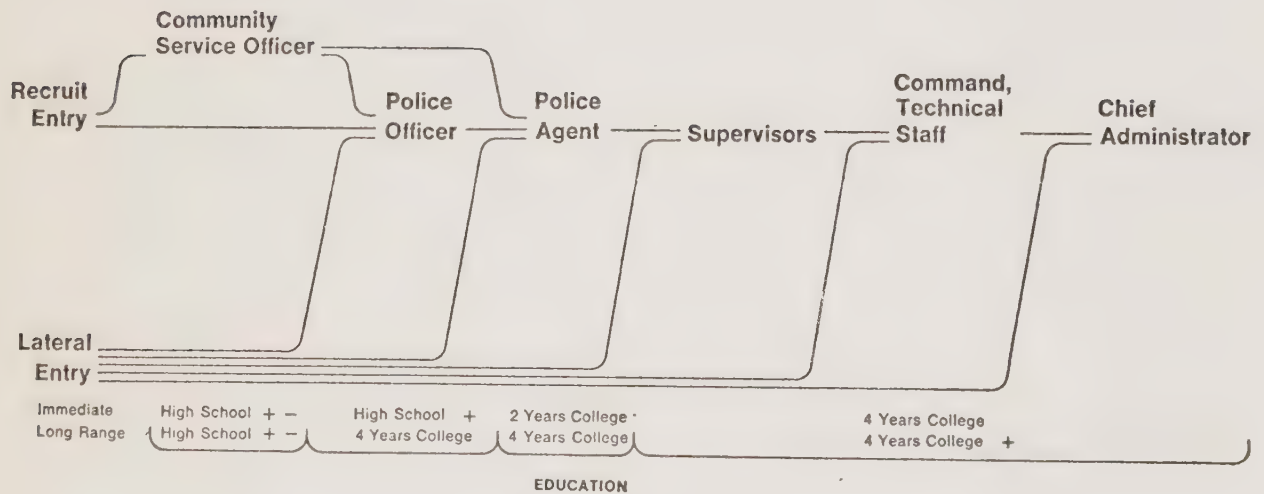


Figure III-25. CAREER DEVELOPMENT AND EDUCATIONAL STANDARDS

To reduce crime, the conditions which cause crime must be eliminated. Presently, all the causes of crime are not known. In general, some environmental and personality defect is involved; although usually other persons from the same environment do not become criminals. Certain social conditions such as: poverty, poor education, poor home environment, and crowding, are known to be related to crime. Thus community requirements such as improved living conditions, improved educational process, and a stable economy with adequate employment opportunities are part of the police-crime picture. Efforts to effect these social goals will also reduce crime. If, in addition, mental as well as physical health services were available, particularly to children and young adults, criminal tendencies would be still further reduced.

It is possible that a sufficiently enlightened society would have a minimal crime rate. However, this state is a fantasy for the foreseeable future. Since 1960 there has been a sharp increase in crime throughout the United States. The reasons for this increase are unknown and only a few possible causes have been delineated like the ones listed above. It has been suggested that the increase in the percentage of the population in the under 35 age group has caused some of the increase since this group contributes disproportionately to the criminal population. The permissive rearing of children has also been indicated as a possible contributor. However, an adequate explanation for the extent of the increase has not been proposed.

Moreover, indicators point to increased crowding, an increased distance between the poor and well-to-do, and continued social unrest. It is assumed that the "war on poverty" will fail, i.e., that there will continue to be a poor and uneducated class with a concentration of minority races. In a study made by Harman, Markley, and Rhyne an attempt was

made to develop a predictive function from history. Their work pointed to some disquieting predictions of unattractive life styles for the future, including a very real possibility of the emergence of authoritarian forms of government of either the right or left. Seven decision states which generally precede a revolutionary state are listed in the Appendix. At present, society seems to have progressed further into these seven states than it had at the time the study was published. Even though a continuance of current life styles may be plausible, the next twenty years will be years of crisis and it cannot be assumed that crime rates will decrease. Rather, the role of the police will be more difficult. Police authoritarianism could further encourage the revolutionary element by means of the action-reaction cycle discussed earlier in this paper. On the other hand, the mere maintenance of order may consume such a preponderance of police time that little time will be available to pursue preventive and social endeavors.

Nevertheless, the recommendations emphasize the need for police to take time for social and community involvement. Two types of recommendations are presented: (1) social recommendations to reduce crime principally by creating a redefinition of crime and (2) recommendations of police programs which would make the police force more effective in preventing crime and in solving crimes which occur.

We recognize that these programs will be only minimally effective in reducing crime. The recommendations of the housing, health, transportation, social services, and other committees offer the only real hope of reducing crime. This was recognized by the 1967 Commission on Law Enforcement and Administration of Justice. "While it recommended immediate steps to upgrade the quality of the police and their methods, to revise outdated court systems and to improve correctional techniques, it repeatedly stated that a lasting

solution would require widespread recognition of basic matters that had long been overlooked or ignored and the development of a comprehensive program that would take as much money and understanding as a nation could muster."\* In the absence of such a program our recommendations should reduce the fear of crime and permit the police to work more effectively.

Social Recommendations - Presently our society is in a state of turmoil and changing moral standards. Some of the ineffectiveness of the police is due to their mandate to enforce laws which are not supported by the community. It is clear that more thought ought to be given to the effects of laws before passage. Legislators often respond to an outbreak of some type of behavior by passing laws quickly in an emotional framework. These laws usually are poor laws. Laws in the area of an individual's private life should be very carefully considered and reviewed since moral standards presently change much more quickly than laws.

There is evidence that our present laws regarding marijuana, homosexuality, alcoholism, and gambling are virtually unenforceable and do little to lower the rate of these offenses. Drug and alcoholism problems should be treated as health problems and not as criminal offenses. Studies of the desirability of legislating an individuals morals should be made.

Many of the laws regarding welfare recipients lead to unnecessary police-community friction. For example, a welfare regulation prohibits a woman receiving welfare from having a child over eighteen in her home. Since typically these children are school dropouts and unemployable, there is literally no place for them to go. The mother needs the welfare, but cannot throw her children out in the cold. She

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\*The Fear of Crime, Richard Harris. (Frederick F. Prager, Publisher, 1969).

and her children then see the police as tormentors, not as protectors. Another unreasonable regulation was to discontinue welfare if an able-bodied man resided in the household. This often deprived children in welfare households of a needed male image and father figure. Some thought should be given to the workability of regulations before they are legislated.

The vehicle code laws also appear to lead to unnecessary police-public friction. Often the only contact between lawful citizens and the police is when the police are asked to solve a crime against them and when they are given a ticket by a policeman. There is no evidence that traffic tickets improve driving habits. In addition, these offenses clog the lower court system. In fact, if most citizens did not simply pay the fine, the courts could not process them. Except for hit and run, reckless driving, and other offenses of an extremely serious nature, compulsory driver training and re-education should be used instead of fines. Police would hand out notices of unsafe driving practices and after several of these the person would be required to attend classes to improve his driving habits.

As we implied throughout the description section of this report, fulfilling community needs and requirements is the primary goal of the proposals presented here. A change in emphasis of police roles must be effected whereby the police image is transformed from a symbol of unsympathetic authority who appears only after a crime is committed or peace disturbed to one of responsible interest in community affairs so that crimes and disturbances are prevented. Concurrently, the community itself must realize its responsibility in the maintenance of order and justice. A secondary goal of the proposals is the upgrading of the police and their operations. Perhaps the most outstanding community need for police service is the reduction of crime and the subsequent alleviation of the fear of crime.

## 5. Education Recommendations

1. A program to eliminate racial imbalance in the San Francisco Public Schools should be implemented at the earliest possible date. A very promising solution to the problem of racial imbalance in the school district, and perhaps as a model for other urban districts in the nation, is the "Elementary Educational Complex." The implementation of such a program throughout the district or another one that would eradicate racial imbalance is of the highest educational priority for the San Francisco Unified School District.

2. At a time when increased numbers of citizens are requesting opportunities for increasing their participation in the governance of public institutions, it would be appropriate for the San Francisco Unified School District to study and, hopefully, implement changes in the structure and governance of the school district. While retaining the present school board as the central board, local community boards could perhaps be elected which would be granted substantial amounts of authority for the particular schools under their care. A community controlled school unit should probably not be smaller than a high school with its feeder junior high schools and elementary schools.

3. The development of a system of "community schools" that truly served the needs and desires of the neighborhoods in which they are located would complement the community control recommendation. The community school would be the hub of a variety of educational, health, welfare, clinical, employment, child care, recreational and other community interest activities.

4. Extensive expansion of present bilingual education programs so that the needs of all students and adults are met. These programs should be conveniently located in areas of the city that will be readily accessible to those in need of the service.

5. An extended school year, which is well on its way with a substantial summer program, should be more highly developed. More efficient use of school facilities, longer employment and increased salaries for professional staff along with the remedial, enrichment and recreational programs for students are among the many reasons for this long overdue recommendation.

6. Occupational-vocational education must be expanded in a greatly needed effort to alleviate at least a portion of the high dropout rate in various high schools -- and in particular among racial minority and low socio-economic students.

7. A systematic program to replicate those quality education components now present in various individual or small groups of schools should be implemented. There are many excellent educational programs in various schools that should be offered on a district wide basis.

8. A massive program of rehabilitation and new construction of school facilities is needed immediately and for some extended period of time in the future. The physical plant of most of the San Francisco Public School System is in need of modernization. Many buildings are in poor physical condition and most were designed before the advent of new teaching methods and techniques which require greater flexibility of use of space and materials. The reconstruction of the physical plant of the public schools also presents an opportunity to help deal with social problems, such as racial imbalance, as well as to meet educational and facilities requirements.

9. Financing of the San Francisco Public Schools needs to be changed to enable the district to conduct its necessary educational programs. It is doubtful that substantial increases in either local or federal funds is realistic. Therefore, greater attention must be given to possible ways of increasing what has for the last few years been

a decreasing share of elementary and secondary educational costs at the state level.

10. The substantial resources and general public support that will be needed by the public schools in the future will only be secured and maintained by a much more sophisticated method of accountability than is presently in use. Implementation of a program of soundly developed and easily understood accountability will be an essential responsibility of and benefit to the school board and all others interested in the public education enterprise.

a. Racial Imbalance of San Franciscos' Public Schools

The public schools of San Francisco are becoming increasingly segregated. Beginning with the Stanford Research Institute report of three years ago and numerous others that have followed, there have been a number of proposals submitted to the San Francisco Board of Education which have outlined various alternatives that would achieve partial or total elimination of racial imbalance in the public schools of the district. The development of the "elementary educational complexes" has been the most feasible plan for a comprehensive integration effort for a group of elementary schools. This pattern should be replicated in other areas of the city in order to achieve a satisfactory level of integration for all elementary schools of the district. With the achievement of integration in the elementary schools of the district, the drawing of attendance boundary lines for junior and senior high schools. A positive, workable plan for desegregation of all the schools in the San Francisco School District is not only of an educational high priority but it will also be increasingly necessary in order to satisfy court and judicial mandates; to say nothing of satisfying the human desires of and moral responsibilities to the large segments of the population directly affected.

A lengthy justification for the elimination of racial

imbalance in the San Francisco Public Schools is not the purpose of this document. Suffice it to say that this matter is covered sufficiently well in judicial and court decisions and educational, social and psychological research. The point to be made is that the district has a problem of racial imbalance that is becoming more rather than less serious and the Board of Education should act in the most expeditious manner to alleviate the problem.

It must also be acknowledged that racial imbalance will never be satisfactorily resolved until the housing patterns of the city are such that each neighborhood will be multi-racial. There are various public agencies that can exert substantial influence and authority to eliminate present housing restrictions which effectively prevent the development of multi-racial communities. These facts and the problems of the housing situation do not justify delay of implementation of the best methods known to achieve maximum feasible racial balance at the present time.

b. Educational Equality/Quality

Any discussion of the future of the San Francisco Unified School District would be far from complete if it did not include information relative to the educational complexes that have received a great deal of study during the past three years. One of the complexes is to be implemented in September 1970. The San Francisco Unified School District is embarking on one of the most exciting programs ever conceived for its schools. The Board of Education has accepted a bold and innovative approach to providing educational equality and quality.

The development of the educational complex in San Francisco had its genesis in 1966 when the Board of Education employed the Stanford Research Institute to determine ways in which racial balance could be improved in the San Francisco Unified School District. Out of the alternatives presented

by SRI, and the inclusion of the dimension of quality education to that of racial integration, the Superintendent of Schools presented a series of recommendations that evolved into the educational complex. Effort was made to seek racial and ethnic balance and an integrated educational experience in the context of the highest quality of education for all students.

San Francisco is on the one hand unique and on the other it is typical. In the first instance its high residential concentration of minority people includes Orientals, Spanish surnamed and Negro groups. Bilingual problems for large numbers of Chinese-speaking and Spanish-speaking students reflect unique educational needs and have led to the development of intensive programs of bilingual education for large numbers of these children. Negro parents have insisted on a new innovative model school for their children to be built in their own area, reflecting a renewed interest in cultural and ethnic values and the kind of excellence in education which hopefully will attract parents and children of other races to their school and neighborhood.

Recent years have witnessed an increase of minority population, and in areas in which they reside, causing efforts to improve racial and ethnic balance in the schools to become more difficult. There is a need to stabilize the population and, if possible, attract the return of families from suburban areas to the city where they and their children can have the advantages of outstanding educational programs. San Francisco is typical of an urban complex in that its students and majority and minority groups respond to change and to new stimuli pretty much as their counterparts do elsewhere in the nation. Therein lies the hope for the future. There is reason to believe, on the basis of recent experience and research, that the achievement and individual and social maturity of young people rise as a

by-product to integration.

The San Francisco Board of Education adopted a policy statement on integrated quality education on June 10, 1968. The Board in taking this important action recognized the responsibility it had to exercise leadership in the development of policies and programs leading toward improvement of quality education through orderly integration of its schools and with due consideration given to concurrent sound educational approaches and any unique problems of San Francisco. The Board pledged itself to promote racial and ethnic integration with carefully considered and practical plans that are reasonably feasible and acceptable.

A broadly representative citizens' advisory committee was appointed to help a task force of teachers and administrators evaluate discussions of nine public meetings held to suggest approaches to equality/quality in education that could be successfully initiated in San Francisco and also to react to various recommendations made by the task force. The committee also made recommendations of its own. Conclusions reached by the committee strongly advocated an action program for the school district. They asserted that unless San Francisco was to move from neighborhood to community schools at the elementary level, the increasingly difficult problems which the school district was facing at the secondary level were sure to escalate. The committee further concluded that the San Francisco School District should give top priority to implementation of proposals for the development of elementary school complexes.

The actions of the Board of Education, Superintendent, administration, faculty, and the citizens' advisory committee are to be commended for their forthright and forceful position of leadership in this important educational and societal issue. These groups clearly, and correctly, took the position that the school district could no longer look

to the community for leadership but must itself lead the community. Obviously the schools cannot solve all of society's problems, however, it is certainly proper to acknowledge that no institution is better suited than the public schools to start society on the path toward meaningful integration at all levels.

The idea of the elementary school complexes was to create models for future complexes throughout the school district. A basic objective of the complex is to bring together essential elements for superior education for children and adults that will be appropriate for their life span. The complex proposes to accomplish this goal in a setting which will stimulate learning and create in pupils a better understanding of the society in which they live. The complex concept is an effort to restructure San Francisco's public school system. The concept is in response to the need for quality education, available to all individuals in the community, irrespective of race or socio-economic background.

Some of the distinctive characteristics of the complex concept are:

- Quality education in racially balanced schools
- Wider choice of subject matter
- Extensive opportunity for independent study
- Specialization of teachers
- Extensive use of resource people, aides and lay community personnel
- Extensive adaptation of contemporary and innovative teaching approaches
- Adjustable modules of instructional time
- Larger, more appropriate physical education, and recreation programs
- Wider community center uses
- Extensive and appropriate library facilities, both for student and adult use
- Enlarged and improved counseling services
- Increased opportunities for various student groupings

- Extensive use of new technologies

The framework of the complexes was structured to keep kindergarten children close to their homes; emphasize the basic fundamentals for grades 1-4; and provide a more appropriate educational environment for grades 5-6. The complex utilizes the enlarged neighborhood for several schools. Geographic areas would be assigned to particular schools, so that all schools would have racial and ethnic percentages more closely approximating the population of the entire complex. It is estimated that about one-half of the students in each complex would be within walking distance of the school. The restructuring of the grade levels in schools would make it possible for all of the schools in the two complexes to develop innovative and creative programs, the most effective deployment of staff and the use of personalized and individualized instructional programs with the most modern instructional materials and methods. Large student groupings at the primary and intermediate levels should provide for better utilization of the talents of teachers and instructional materials. In addition there could be a more effective use of supportive services, as well as a realistic program of professional development and in-service education related directly to the teachers and administrators in the schools served by the complex.

Joint planning of the schools in the complex will be an opportunity for the use of the most effective combination of promising and proven educational innovations. Behavioral goals are to be agreed upon and stated in clear, concise terms. School-community involvement in educational planning to achieve the goals is an essential component. Carefully planned curriculum would reflect a vital and dynamic instructional program designed to individualize learning with continuous learning progress for each student. The ungraded concept could be applied especially at the primary level where there should be intensive emphasis on reading and the

basic skills so that before leaving the primary school every child would have developed to his full potential in these important areas.

Better utilization of staff could be provided through a carefully developed program of team teaching at appropriate levels, with large group and small group instruction and independent study. Instructional exchanges will be encouraged between schools. Resource Learning Centers that could be located at various K-4 and K-5-6 schools would have multimedia resources and new technological aids that could be used wherever necessary by other schools in the complex. A complex would provide an opportunity to initiate differentiated staffing on a multi-school basis. Various staff members, depending upon ability and experience, could serve in different capacities, such as senior teachers with special responsibilities in instructional leadership, teachers with key teaching responsibilities, and junior instructors who would be serving on an assistant basis. Para-professionals would be utilized even more effectively in this kind of differentiated staffing with whatever staff designations might be decided upon.

An individualized program of instruction would provide much greater opportunity for the gifted to have truly challenging educational experiences. There could be expanded programming for the special educational needs for the educationally handicapped children. Bilingual programs could be intensified for Chinese-speaking, Spanish-speaking, and other children with a language handicap. The complex would provide the opportunity for more adequate supportive services to include librarians, social workers, psychologists, audio-visual specialists and school-community teachers who have been available only at the elementary level on a limited basis. The intensive thrust in quality education would be supported by equality for students who are presently in

ethnic and racial isolation from one another at the elementary level and would now have the equality component within an educationally innovative framework. Intensive efforts would also be made to achieve integrated staffing in all schools of the complexes.

A Cultural Learning Center could be initiated first as a Curriculum Materials Center to provide enriched opportunities with resources not available at each school. This could include a reading clinic, tutorial study center, communications skills laboratory, typing-shorthand laboratory, health services, testing and evaluation center, language laboratory, science-mathematics-computer laboratory, social skills center, family services, drama, arts and crafts laboratory, television studio workshop, skills laboratory, music center, physical education and aquatic center, and food services. The Center would be open day and night and could serve the community on weekends and during the summer.

These two complexes, composed of 20 elementary schools with over 9,000 elementary students would represent one of the first large desegregation plans in a major urban center in the nation.

The estimated cost of implementation of the two complexes for the first year would approach four million dollars or in excess of \$400 in increased funds per elementary student in the complexes. Non-recurring costs would substantially reduce the on-going costs for future years.

There is nothing in the proposal for the development of the complexes that should not, with substantial justification, be replicated throughout the elementary schools of San Francisco. Similar improvements in the secondary schools are of equal or greater importance.

#### c. School District Reorganization

Few areas of educational discussion have caused a greater amount of controversy in recent years than that of

urban school district reorganization. Of the two types most often discussed, 1) decentralization of central office bureaucracy and 2) community control; increasingly, recommendations for the latter, as the route to take in urban school district reorganization, are being made. A breaking up of the large urban school district into sub-units by total population, student population or some sub-division of the present district structure is not the most important factor. The possibility of a sub-district unit being composed of a comprehensive senior high school along with its feeder network of junior high schools and elementary schools has considerable merit. The ultimate size of the community controlled district is, although important, not the critical factor because under any circumstances it must be smaller than the present district. The most important factor is the division of authority between the central district and that of the community district. The initial authority to be granted to the community district would be that of electing a community school board; with that board in turn having the authority to hire a chief school administrator. The community school board should represent much more closely than present urban boards are able to, the desires and aspirations of the local community. A community elected school board would provide a much greater opportunity for representation by individuals from groups that are minorities of the overall urban district but that would be a larger, if not majority, component in the smaller community school unit. A second matter of critical importance is that of fiscal authority and responsibility. It is usually concluded to be infeasible and self-defeating to grant tax levying authority to the small community school unit. However, the central district school board which would remain as a legal entity with areas of substantial importance and authority within its jurisdiction, would levy taxes and collect state and federal

monies for the entire district and distribute them according to prescribed formulas of need to the community boards who would then have nearly complete discretion as to how the money was to be spent. Restrictions would largely be those of state and federal law. A third area of concern would be that of relating to employment, discharge, assignment, salary level and staffing pattern of personnel, and in particular, professional personnel. Once again it seems that there is adequate justification in having the central urban board be responsible for some district wide personnel policies, including the employment of their chief administrator and other staff members. The usual state certification and other personnel laws would apply at the community district level as they do in the present urban district. Another area of importance that would have to be dealt with by the urban board would be that of school facilities. Assuming limited resources to be available for construction of school facilities, it would be the responsibility of the Urban Board to establish priorities for construction throughout the district and allocate available funds accordingly. Once funds are allocated, substantial planning and implementation authority could be granted to the community board.

d. Community Schools

In addition to the implementation of the Elementary School Complex structure throughout the district, another structural development that should be of high priority in the district is that of the Community School. A Community School is a physical structure and its surrounding land area, which is used primarily for educational purposes, but has the facilities for and, to the extent of such facilities, is made available to meet other community needs. It can be an elementary, junior high or senior high school, but it is usually an elementary school since it has the greatest neighborhood identity.

The Community School idea arises from the need to have a neighborhood facility in order to provide education and community services for both adults and youth beyond the usual classroom curriculum for school age children, and an attempt to make full time use of a structure normally occupied seven hours each weekday for only nine months of the year.

The services offered by a community school are geared to the needs of each particular neighborhood, but generally include recreational and leisure-time activities, pre-kindergarten and special school programs, casework and group work services, health and dental clinics, student tutoring, adult education, youth group meetings, citizenship classes and senior citizen activities. Space is also provided for neighborhood meetings. Larger regional type centers at junior and senior high school locations would provide a wider range of services to a larger population. Historically more programs and activities have developed at this larger community level with too little involvement at the elementary neighborhood school.

Many of the same services offered at the neighborhood centers would be available at the regional centers. In addition, however, there would be services of a nature to serve the specialized needs of adolescents, young adults, parents, and families. Employment, welfare, legal and family counseling services would be provided.

The Community School offers a coordinated program in which the educational, social, recreational and welfare agencies of the city combine for the social, economic and physical betterment of the neighborhood.

The services within a Community School will differ depending upon the specific needs of each neighborhood and the existence of other facilities elsewhere within the neighborhood to meet these needs.

The building and other facilities should be open on weekends, evenings, and during the summer. It should be so constructed or organized that facilities to be used during the school day will not interfere with the educational program in the building, and should permit certain areas to have separate access and be capable of being sealed off during non-school hours.

A list of all reasons for establishment of a network of Community Schools could be pretty exhausting; suffice it that ample justification would be found among the following for this addition to the social, recreational and educational activities of San Francisco and its many neighborhoods:

- The family approach to social problem solving would be enhanced since parents could come for assistance to the same school their children attend and the same place where they can go for their own recreational, educational, and leisure-time activities.
- The schools become identified as community or neighborhood centers, rather than merely as educational institutions for school age children.
- A closer working relationship would be established between public and private agency staffs and school staffs, especially in regard to the early identification of both learning and social problems of young students.
- The prevention, alleviation and solution of social problems could be achieved when the school and agency staffs are present at the same time and place. Many family social problems are first recognized in school problem children.
- Lower costs may, increased service certainly will, occur through sharing and reciprocal use of facilities by the social and recreational agencies, community groups and the schools.
- Personal and family problems need to be resolved before children can effectively learn; the services of the community school would enhance this possibility.
- The high cost of public facility construction requires avoidance of duplication in facilities and maximum use of such facilities.

The implementation of a Community School program would not be a large financial venture. In most instances a staff member would be assigned to each school to promote and coordinate the various uses of the school facilities. Each school would have a broadly representative neighborhood advisory council to be a sounding board and express in explicit terms the desires of its respective neighborhood. The Community School concept involves existing agencies in a system of cooperation and referral. The Community Schools offer their facilities, their close communication with neighborhood families and their familiarity with neighborhood problems to other local institutions with problem-solving resources.

The Community School plan is predicated on the concept of making service available, as needed, within easy reach of all citizens.

e. Bilingual Education

One of the unique features of San Francisco as an urban school district is the large construction of Chinese and Spanish surnamed students to whom English is a second language. Steps have been taken and progress is being made to develop and implement meaningful educational programs for students and adults that have language handicaps. The main thrust of the bilingual program would be teaching English as a second language. The program should be broad enough to include service to pre-school children and adults as well as the prime target population of students. Included in such a program would be the employment of adequate numbers of Spanish and Chinese speaking teachers to help insure success of the effort.

The Chinese-language and culture schools that have been established to serve Chinese children after regular school hours could well be included in the regular public school program with substantial benefits to the Chinese students

as well as other students and faculty that would have the programs available to them.

Communication is the most essential element in the entire educational process. Without communication, the transmission of the most basic skills cannot be accomplished. Without these basic skills, the individual is unable to participate fully and effectively in the larger society. A substantial number of Chinese and Spanish surnamed children lack facility in English. Supplementary English training is insufficient; many of them, as a consequence, remain handicapped throughout their tenure in the public school system. Immediate and comprehensive action should be taken that would bring all language handicapped students and adults into the mainstream of benefits to be derived from the educational experiences received from the public school system and the acquisition of English language skills equal to their capacity to benefit from such instruction.

As a part of the Bilingual Education program, or certainly as an adjunct to it, an effort to insure that teachers in the public schools, and in particular those who teach in schools that have sizable proportions of their student bodies from Chinese and Spanish-surnamed communities, become familiar with the culture of their students. Teachers and administrators should be required to take in-service courses to acquaint themselves with the cultures of the students in their classes.

f. Extended School Year

For too many years too many of our public school buildings and facilities have been almost totally closed down during July and August. Teachers were out of work or working at second jobs that were rarely even remotely related to their professional competencies. The public school system has tenaciously half to a school calendar that had its origin in a time when our society was highly oriented

to an agrarian way of life. Many forms of an extended school year are taking shape. Two key criteria in changing the school year should be, 1) improvement of the educational program for students and, 2) increased use of educational facilities. Another benefit of such a program is the increased professional utilization of teachers, along with the justification for compensation comparable to other twelve month salaries of equal professional stature.

The program of an extended school year for students would include regular course work for academic credit, remedial classes in a variety of areas, enrichment classes that would go beyond the usual content of a specific course, recreational and leisure time activities would be an essential component, individual work in a host of areas would also be possible.

For professional staff the extended school year could provide a time to do those many things that are increasingly taking time from teachers' teaching time during the regular school year. Various in-service education programs could be scheduled, curricular writing and revision efforts could be organized, research, study and travel would also be important components. In addition, there would be a substantial number of the faculty who would have teaching responsibilities and others whose time would be spent on various community-school projects such as home visitation and student and family counseling regarding educational programs and opportunities. This would be an excellent time to schedule meetings and conferences for teachers, administrators, students, parents and other community representatives to discuss school problems and possible solutions to them. These meetings would also provide an opportunity for community input for curricular development and other school planning efforts. Another factor justifying the expanded school year concept is that of a decreasing job market for students in the summer.

g. Occupational-Vocational Education

Substantial numbers of students from the public schools of San Francisco do not go on to college. This condition is especially critical in those schools where there are concentrations of racial minority and low socio-economic students. Lack of adequate occupational-vocational education is in the first instance a probable cause for the high dropout rates of juniors and seniors in these particular schools. In the second instance the lack of these educational programs causes high school graduates to be confronted with the inability to be employed when they do complete their high school education. The schools do little to prepare students for a job. There are too few instances of practical links existing between the schools and the world of work. Within the district there is a continuing discussion on the subject of vocational vs. academic education in the comprehensive high school. There is no question but that the basic academic skills should not be neglected, but viable choices of electives are needed. The fact of the matter is that many students prior to completion of high school and others at the time of high school graduation join the job market and are entitled to have some marketable skills just as much as the prospective college student must have the educational background necessary for that endeavor.

h. School Building Needs

Education has experienced a great many innovations during the past two decades and there is every reason to believe that changes will occur at an even faster pace in the future. It is not unheard of for a school building to be out-dated before it is occupied and it is also almost impossible to predict the physical requirements of a school five years into the future. New schools must provide the most flexible and adaptable facilities possible in order to function properly in the future. Old schools need special

attention in order that they might be modified to meet the program demands that are theirs now and in the future.

Unfortunately, San Francisco's existing public schools have consistently been over-built on exceedingly small sites which have required two to five story compact buildings and allowed inadequate outdoor spaces for physical education and landscaped areas. The sharply sloping terrain of many of the schools has further handicapped desirable school facility and site development by dictating split level designs and extensive retaining walls to provide a minimum of terraced, level outdoor area.

At least a portion of today's troubles in the nation's urban schools is that their educational programs are housed in old, outmoded, overcrowded buildings on small sites that, in most cases, preclude expansion. School buildings, 30 to 50 years of age, designed for the bygone era of the self-contained classrooms, inhibit today's teaching-learning techniques and mournfully lack the visual, acoustic, thermal and aesthetic environmental qualities technologically achievable in recent years.

Because abandonment or replacement is seldom achievable financially, politically, or logistically, these school systems are most often confronted with the necessity to remodel and repair and only replace on a gradual basis.

Funds - Federal and increased state funds appear as a hopeful alternative. Local funds, from the property tax, would be sorely pressed to support such a program. The statement is very often made when talking about the high cost of urban land used for public services that this removing of valuable land from the tax and income producing roles must stop or certainly be restricted or curtailed in some manner. Perhaps it is now time to ask whether an urban school district such as San Francisco can afford not to dedicate substantial additional land space to educational and recreational purposes.

### i. Financing of Education

The San Francisco Unified School District, like many other school districts in the nation, and in particular, urban school districts, is facing increasingly difficult problems in financing the public school enterprise which it has been given the responsibility to operate. On the one hand it has been delegated by the state legislature the conduct of the educational affairs of the school district, but on the other hand, it has not been granted full fiscal authority to conduct those programs, at whatever cost, the school board might deem appropriate. To add to this problem, the state legislature has been steadily decreasing its percentage share of the total cost of elementary and secondary education of the state. The federal funds, which have increased substantially during the past five years, have supplemented rather than supplanted the local and state funds and therefore have not decreased the fiscal problem for local districts. In fact, a case could easily be made that federal funds have caused local expenditures from local sources to rise in what was already a very tight monetary and tax situation.

Citizens rarely have an opportunity to vote against taxes. School bond issues and tax override levies are major instances when the public has a chance to say no to increased taxes -- and they are increasingly doing just that. There are no easy solutions to the fiscal crisis facing the San Francisco Unified School District. Although the feasibility of them does not appear to be great, there are a number of alternatives that must be examined as possible courses of action to alleviate the financial plight of the school district. The first would simply be increased revenues from local or state or federal sources or a combination of two or more of these sources of funds. In order to get substantial additional funds from local sources, a number of changes

would probably be necessary. First would be the addition of a new tax source, to supplement the increasingly inequitable property tax, made available to school boards. A second alternative might be the removal of all tax limitations now imposed on local school boards by the legislature. Neither of these alternatives appear to be very feasible. Increased funds from the federal government does not appear to be a realistic hope for the near future. That leaves the state as the last, and most hopeful, source of increased funds in future years. In order for this to happen, the trend of decreased percentages of the cost of elementary and secondary education from state sources during recent years will have to be reversed.

States and local school districts have jealously guarded their right to control public education throughout the history of our nation. In order for them to continue to have this right, they must meet the challenges of financing the public educational system which has been entrusted to their control.

#### j. Accountability

During the last decade great emphasis was placed on new and innovative programs and techniques to improve the quality of education for students and adults. There is some indication that the emphasis during the coming decade will be upon accountability. The San Francisco School District has made an excellent start, although much remains to be done, in developing and implementing a program-planning-budgeting-system (PPBS), to increase its accountability component. A successful PPBS program is built upon the setting of achievable, measurable objectives for students and professionals. The process of objective setting should involve a rich interaction between professional educators, students, parents, and other community residents. State legislation requires installation of a PPBS program in the San Francisco

Unified School District and the district is proceeding satisfactorily in moving toward completion of this assigned task.

## Appendix III-A

### Greater San Francisco Chamber of Commerce

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Senior Administrative Officer of Bank of America

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Chairman, World Trade Association: John H. Robinson  
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Vice-President of Communications: John Hoefer  
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President of Connell Bros. Co., Ltd.

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Vice-President, Transportation: Fred Kohlenberg  
President of Kohlenberg Cadillac Co.

Vice-President City Planning: John O. Merrill  
Skidmore, Owings, & Merrill, architects

Treasurer: George L. Killion  
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Marron Kendrick  
President of Schlage Lock Co.

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Vice-President Southern Pacific Co.

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President of Paul Masson Vineyards

Richard K. Miller  
Manager of San Francisco Division of PG&E

Arch Monson, Jr.  
President of Monson Electric Co., Inc.

Vice-President World Trade: Louis W. Niggeman  
President Fireman's Fund American Property Casualty  
Co.

Vice-President Economic Development: John F. O'Connell  
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City Planning: Ed Lawson

General Manager: Ed Bruske

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Manager of World Trade Department: Tom Caylor

Manager of Public Affairs Department: John Greenagel

Manager of Transportation Department: Richard Harcourt

Manager of Economic Development: James Murray

Manager of Publications Department: Gary Smart

Art Director for San Francisco Business Magazine: John McCuen

Systems Bookkeeper: Kil U. Kim

Aviation & Traffic Manager: James Cooper

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Systems Manager: Dave Marcelle

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Managing Director, St. Francis Hotel  
Sr. Vice-President Western International Hotels

### Membership

Manager: Lex Byers

Vice-President: Fred Kohlenberg

Alva H. Giffin  
Partner, Ernst & Ernst

Fred Kohlenberg  
President, Kohlenberg Cadillac Inc.

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Chairman, Fairmont Hotel

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Vice-President: Marron Kendrick

Edmund A. Hartsook  
Committee Liaison, Vice-President & General Manager,  
Chevron Land and Development Co.

Alvin C. Rice  
Sr. Vice-President Bank of America

Publications

Manager: Gary H. Smart

Vice-President: John Hoeffer

Job Development

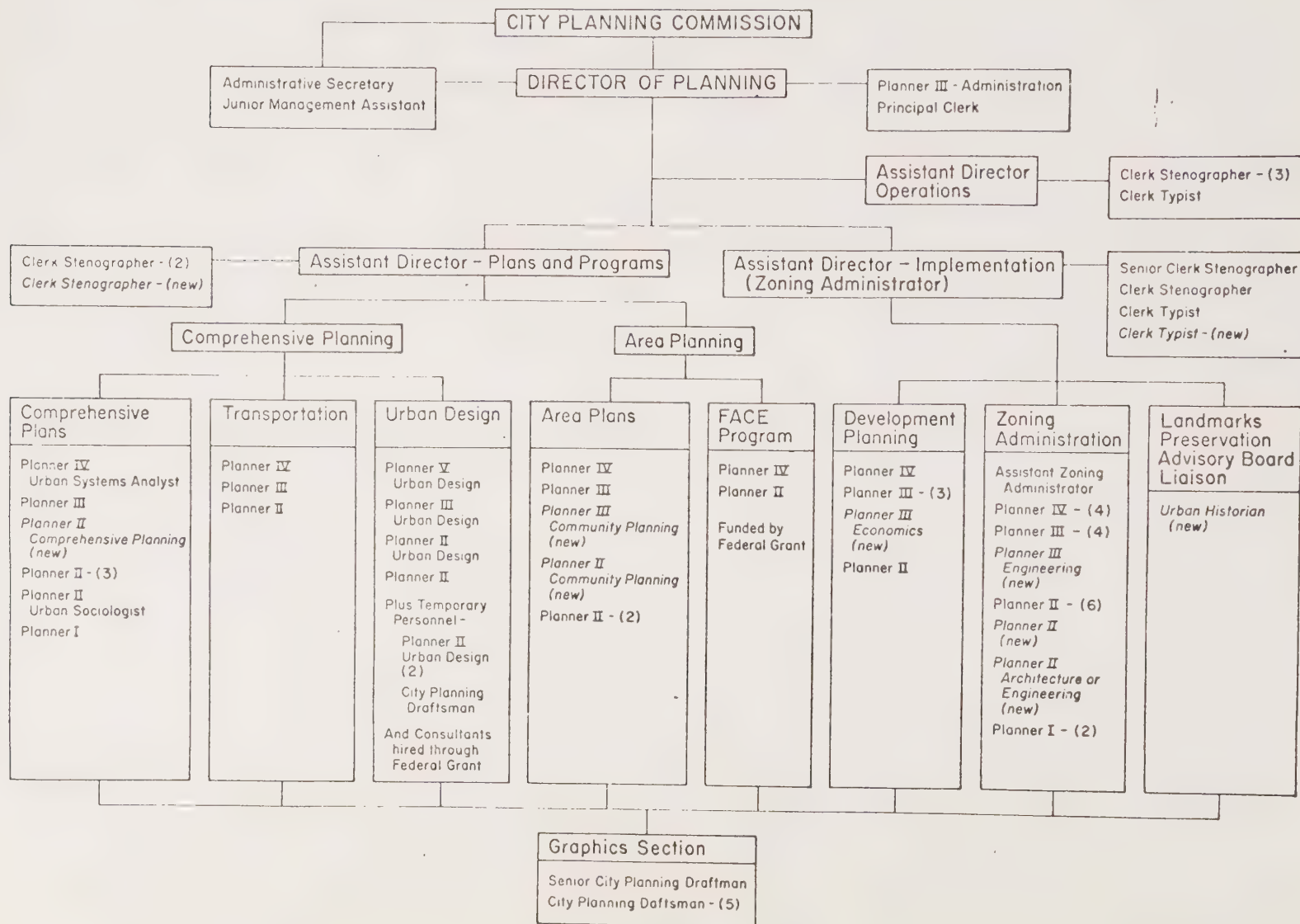
Manager: Al Hicks

Vice-President: Curtis E. Smith

Ralph Larson  
Chairman of Morris Plan of California

William G. White  
President & Chairman of Consolidated Freightways

# SAN FRANCISCO DEPARTMENT OF CITY PLANNING - PROPOSED ORGANIZATION CHART 1970-71



## Appendix III-C

### Housing Production

The Housing Systems Interface Group was created at the end of the first project quarter (Winter, 1970), after the realization that additional concentration was needed in certain areas than could be expected from the general groups. The organizational blurb read as follows:

Housing Systems. This interface group will consist of two members of the Housing Production Group, one member each from the city changes group, Physical Community Design, Housing Finance, and the Building and Labor Codes Group. They will develop estimates of housing needs, assess the current and projected housing stock, identify alternative methods of rehabilitation and new production, and will suggest the best alternatives, mixes of production, methods for production of new houses of all types and rehabilitation of existing housing stock.

Initially what was expected from the group in the blurb appeared massive. Their first response was to immediately set out to define more explicit goals, so they, at least, could feel some degree of accomplishment at the end of the quarter.

They isolated the subject of rehabilitation as the only topic which could be somewhat grasped in the remaining quarter's time. Selecting rehabilitation, they put the blurb aside.

The first idea they decided to explore was the establishment of district co-ops to handle all aspects of rehabilitation on the small community level. A community organized labor force would pass through the community, rehabilitating member's dwellings in a cyclical pattern. Meeting once a week for one or two hours they soon realized that rehabilitation in San Francisco could not be discussed sufficiently without additional background information, such as: what condition the existing housing stock was in, what present rehabilitation programs existed, ways to fund any type of

massive program, ways to motivate the absentee landlord to rehabilitate his property without transferring the costs to his tenants, ways to determine when rehabilitation would be economically more desirous than reconstruction. These areas were divided by interest and expertise among members of the group.

This report is clearly incomplete. It is intended to be given as background information and to help provide an initial direction. We strongly believe that many of our recommendations and suggestions should be followed through and developed further. As an understanding of what they are intended to determine could potentially have a great impact in ameliorating San Francisco's Housing Crisis.

a. A Study of the Present Housing Stock of San Francisco and Forecast of Future Trends -- with Emphasis on New Construction and Rehabilitation Requirements for the Next Twenty Years

Any discussion of future housing in San Francisco must take into consideration the population trend. Population peaked in 1950 at 775,357 inhabitants then declined to 740,316 in 1960. "Several predictions have been made about the future population of San Francisco. The Rand Corporation estimated that the total would exceed one million in 1980. The State Department of Finance forecasted a range from no increase by 1980 to an increase of 100,000 by that year. The San Francisco Community Renewal Program projected a 1978 population between 855,000 and 867,000. The San Francisco Department of City Planning has estimated that the City's population will gradually decline to 703,712 in 1975, then increase slightly to 710,050 in 1980."<sup>1</sup>

FIRST ASSUMPTION: THE POPULATION OF SAN FRANCISCO WILL REMAIN VERY NEARLY CONSTANT OVER THE NEXT TWENTY YEARS HOVERING AROUND THE 750,000 FIGURE.

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<sup>1</sup>"Issues in Housing," Housing Report 2. San Francisco Department of City Planning, July 1969. pg. 4.

Injection of acceptable "up to standard" dwelling units into the housing stock can be accomplished in any of three ways:

1. Build on virgin land (New Construction).
2. Removal of dilapidated structures and construction of new ones (Reconstruction).
3. Bring existing dwellings up to "standard"\* (Rehabilitation).

Figure III-26 shows the construction activity in San Francisco during the last decade. The recent dramatic drop off was indeed clearly influenced by the tight money market, but more significantly by the fact that San Francisco has virtually run out of virgin land to build upon. Unless the city limits expand, the bay is filled, units are built in the parks or dwelling units are suspended from the bridges, there can be no more 'new construction' per se in San Francisco. In the very near future all 'new' dwelling units will be injected into the housing stock either through reconstruction or rehabilitation.

unless patterns of density are drastically altered within the city, San Francisco may be considered to have reached very nearly its saturation point. Little land remains for development, unless large areas of industrial land or land which has been used for other purposes is committed to housing, major additions to the stock cannot be made without changes in the existing density of development.<sup>2</sup>

SECOND ASSUMPTION: THE HOUSING PROFILE WILL REMAIN SOMEWHAT CONSTANT OVER THE NEXT TWENTY YEARS.

A slight increase in density will occur due to the replacement of single-family dwellings by multi-family complexes, but this should not be in any large scale. An increase in density is not in the best interests of San Francisco, as

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\* See "Rehabilitation Standards," Appendix.

<sup>2</sup> Changes in the San Francisco Housing Inventory, San Francisco Department of City Planning, April 1970. pg. 33.

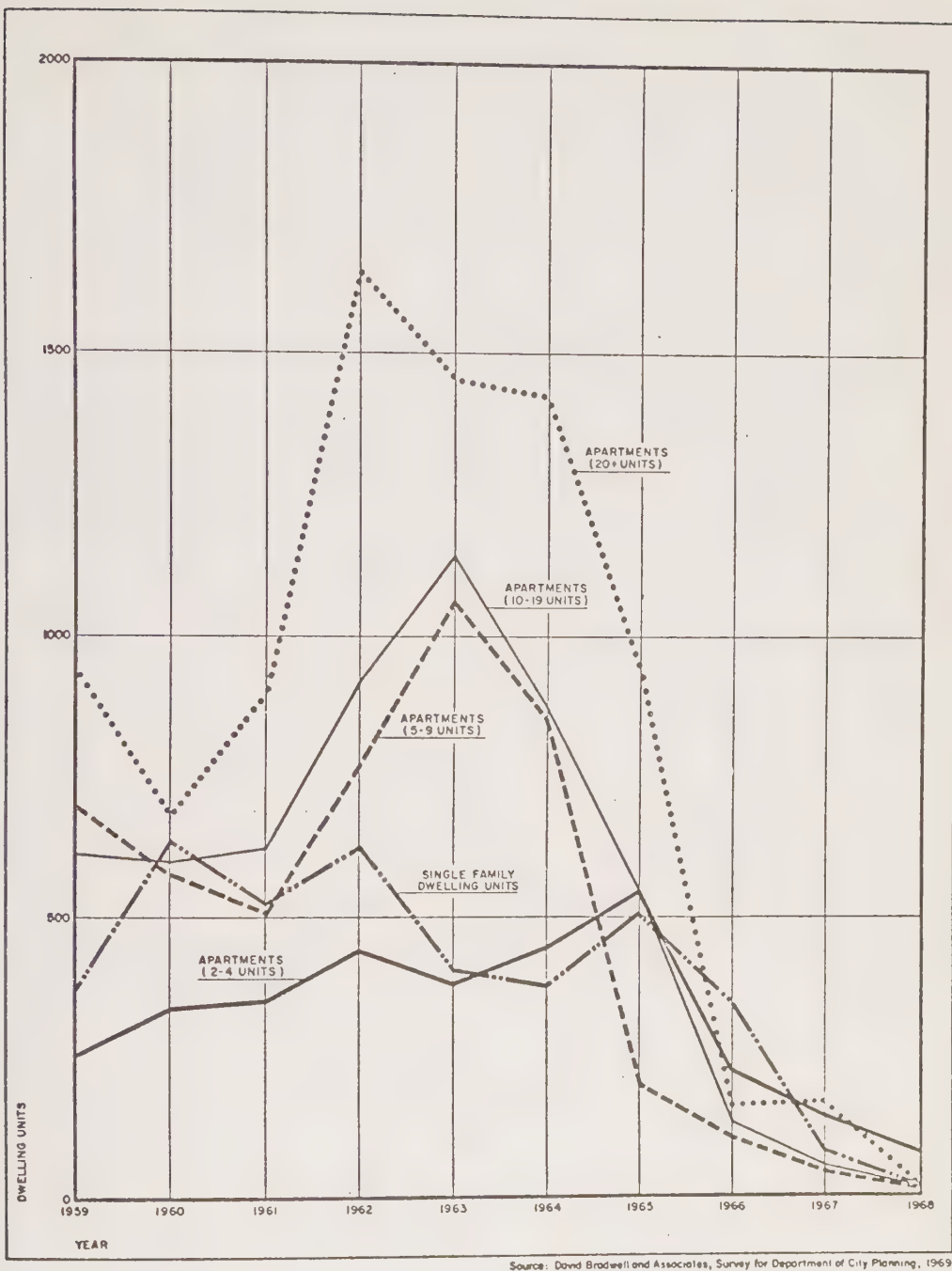


Fig. III-26. NUMBER OF SAN FRANCISCO DWELLING UNITS FOR WHICH BUILDING PERMIT APPLICATIONS WERE RECORDED

it would necessitate a further decrease in the number of families living in the city. The last decade saw San Francisco lose 20,000 families. "Families are the most stable element of the city's population with more permanent jobs and closer community ties. In contrast, the individual usually has more tenuous community ties and less permanent employment."<sup>3</sup>

The decline of families in central cities has been well documented, as households move to single-family accommodations in the suburbs. In San Francisco, however, this trend has been even more intense. The percentage of families as a total for all cities averaged 88.3% in 1950 and declined to 78% in 1960. San Francisco's proportion of families decreased from 78.1% in 1950 to 62.3% in 1960, the lowest percentage of any large city in the nation.<sup>4</sup>

San Francisco should make efforts to stop this family exodus and not encourage it.

Figure III-27 represents the spectrum of total housing stock in the city, given by the 1960 Census data. At that time 45,000 (14.5%) of 310,536 total dwelling units were labeled as 'substandard' of which 12,700 or 4% of the total were designated as 'seriously substandard.'

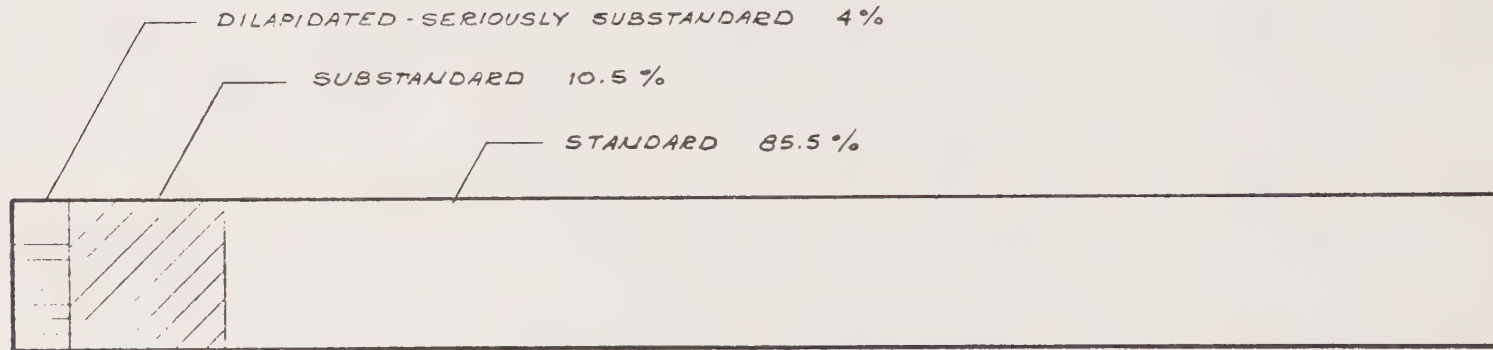
Residential construction during the last decade brought a total of 27,201 new dwelling units into San Francisco, of which 6,110 replaced demolished structures. The remaining 21,091 units increased the housing stock by 6.7% (see "Summary of the Decade", Appendix). The percentage of total new dwelling units divided by total housing stock (27,201/331,627) is defined as the turnover rate, if total housing stock remains constant (i.e., new construction equals

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<sup>3</sup>San Francisco Community Renewal Program Final Report (CRP). Arthur D. Little, Inc., October 1965, pg. 43.

<sup>4</sup>Issues, pg. 5.

# 1960 CENSUS DATA



TOTAL HOUSING STOCK	310.536
STANDARD	265.536
SUBSTANDARD	32.300
SERIOUSLY SUBSTANDARD	12.700

Fig. III-27. TOTAL HOUSING STOCK OF SAN FRANCISCO

demolition). Under these conditions, the turnover rate for the last decade would have been 8.2% or .82% per year. A turnover rate would require 122 years to replace the entire housing stock. (I.e., given the housing stock remains constant and the turnover rate averaged .82% per year, 122 years would be required before every dwelling unit standing now is recycled.)

This recycling process is illustrated in Fig. III-28. A certain percentage of the total housing stock is removed, then either rehabilitated or reconstructed before it is injected back again somewhere into the housing spectrum. Notice not all 'new' units are placed on the top of the spectrum. Some will be of low quality and will require rehabilitative attention in a short time, others in a longer time.

Figure III-29 shows the dwelling age distribution for multi-unit buildings in San Francisco. Presently 62% of all San Francisco's dwelling units were built over thirty years ago. If an equal number of new units were injected into the spectrum every year, this would imply a turnover period or average useful life per dwelling unit of seventy-nine years.<sup>5</sup> If the .82% turnover rate were maintained, by 1980 68% of the housing stock would be over thirty years old, by 1990 74% would be more than thirty years old. Just to maintain the present age distribution of dwelling units and not to allow an increase in older structures, a minimum turnover rate of 1.26% per year is required.<sup>6</sup>

Summarizing, given a stable housing stock with no net increase (i.e., construction - demolition = 0) with an average turnover rate of less than 1.26% per year, the percentage of total dwelling units more than thirty years old

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<sup>5</sup>30 years/1-.62 = 79 years

<sup>6</sup>100%/74 years = 1.265% per year

# RECYCLING OF HOUSING STOCK

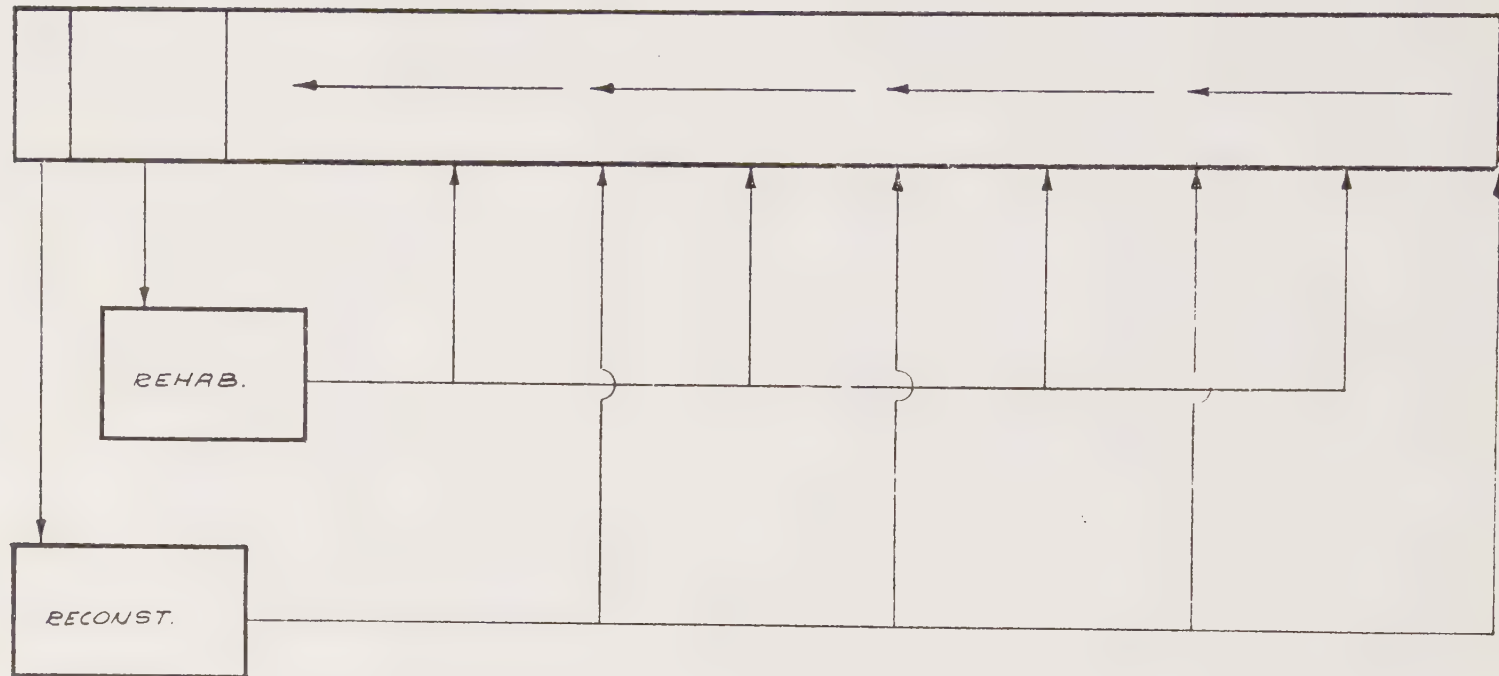
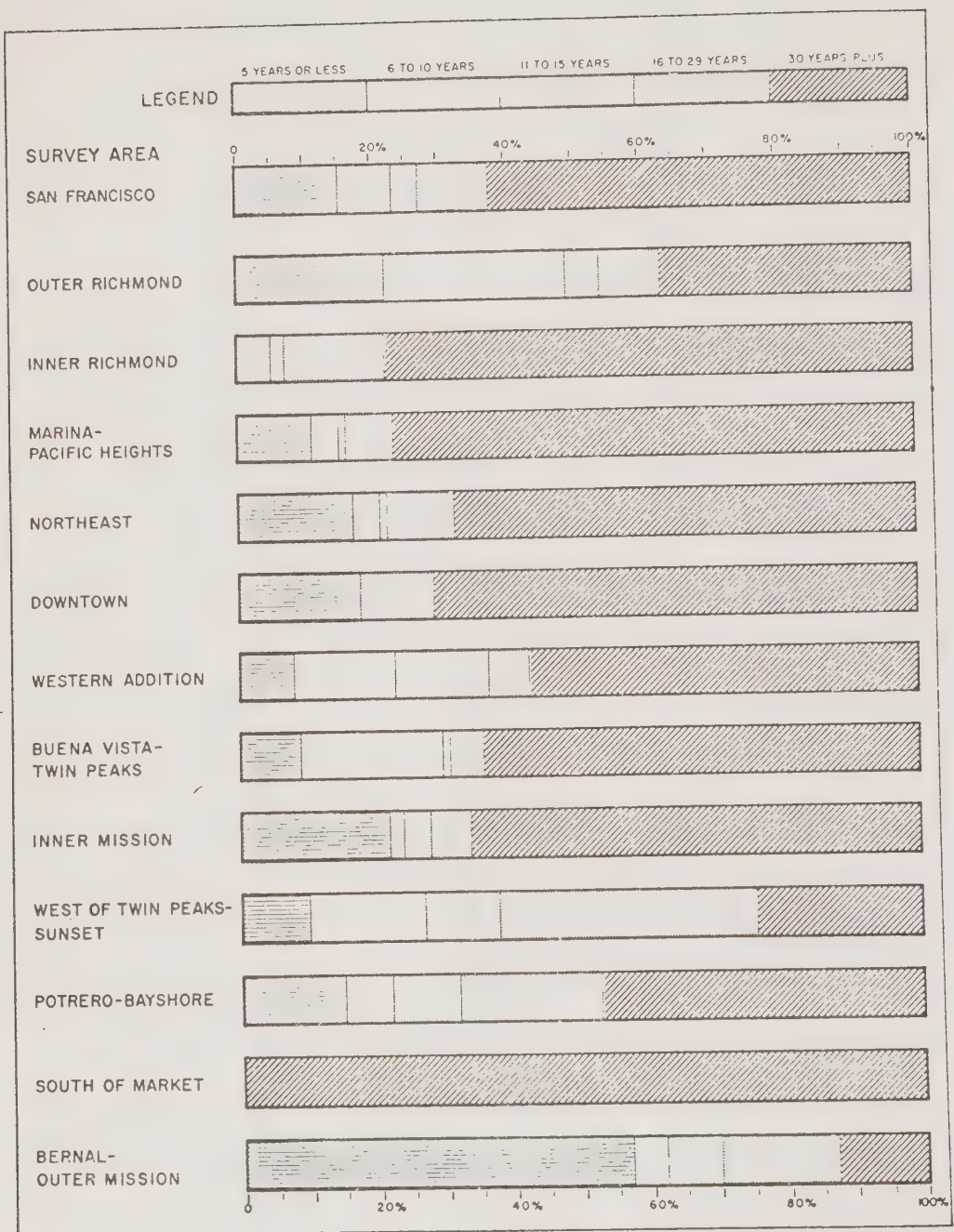


Fig. III-28. RECYCLING OF HOUSING STOCK



Source: David Bradwell and Associates, Survey for Department of City Planning, 1969

Fig. III-29. DWELLING UNIT AGE DISTRIBUTION  
IN MULTI-UNIT BUILDINGS

would increase. Likewise an average turnover rate greater than 1.26% per year would cause a decrease in the present percentage of dwelling units older than thirty years.

If the city's priorities include not allowing the proportion of its housing stock from getting older then clearly the minimum acceptable turnover rate is 1.26% per year. With a housing stock of 350,000 dwelling units, a turnover rate of 1.26% per year would require the reconstruction or rehabilitation of 4,410 units per year.

Sixty-two percent of the total housing stock is not a desirable proportion of the housing stock to be older than thirty years. "In 1960, 95 percent of San Francisco's substandard or seriously substandard housing units were more than thirty years old and 99 percent were more than twenty years old. Not all older property is in poor condition, but keeping it in good condition requires more maintenance and repair than is required for newer housing."<sup>7</sup>

A more desirable turnover period would be fifty years, stipulating a turnover rate of two percent per year. This annual turnover rate will eventually bring the proportion of dwellings greater than thirty years old, down to only 40% of the total housing stock. A two percent turnover rate would require the reconstruction or rehabilitation of 7,000 units per year. This 7,000 figure does not take into account the dilapidated dwellings at time zero. It only considers the dwelling units that will require renewal during the time interval of one year ( $T = 0$  to  $T = 1$ ). Existing substandard dwellings must be coped-with in addition to these units. The "San Francisco Community Renewal Program estimated that in order to provide for adequate middle-,

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<sup>7</sup>Issues, pg. 33.

moderate-, and low-income housing and to renew the standing stock, a production rate of 3,400 units per year would be required for the six-year period commencing in 1966."<sup>8</sup>

Additional units are also needed in San Francisco to increase the vacancy rate. The present rate of 2.3%<sup>9</sup> is far below the 5% value accepted as "necessary to facilitate the normal process of turnover in the housing market."<sup>10</sup>

SECOND ASSUMPTION (REVISED): THE HOUSING PROFILE WILL REMAIN SOMEWHAT CONSTANT AT A LEVEL OF AROUND 350,000 UNITS AFTER ABOUT 20,000 NEW UNITS ARE ADDED TO THE PRESENT STOCK.

The 20,000 new units represent those mentioned in the CRP Final Report which will theoretically "provide for a spectrum of adequate middle-, moderate-, and low-income housing," bring all units up to standard, and provide for a vacancy rate of five percent at time zero.\* These added 20,000 units will boost the housing stock to the previously mentioned 350,000 level with the intent of creating a housing profile which will be advantageous to perpetuate. The make-up and location of these twenty thousand is left to another group, with the following suggestions:

1. They should be large enough and "homey" enough to attract families.
2. A majority should be "low-cost" and replace the low-rent "old" housing which will be retired from the housing stock and recycled.
3. Etc.

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<sup>8</sup>Changes, pg. 8

<sup>9</sup>"Survey of Housing," Housing Report 3, San Francisco Department of City Planning, December 1969, pg. i.

<sup>10</sup>Changes, pg. 8.

\* A five percent vacancy rate will be obtained if one half of the 20,000 new units are let to present San Francisco residents only, but it will be maintained only if no additional increases in population occur.

Determining exactly how many of the 7,000 recycled dwelling units per year should be rehabilitated and how many should be reconstructed is virtually impossible. The decision whether to rehabilitate or reconstruct is not purely one of economics. There are far too many irreducibles to be able to say that all dwellings above a certain point on the housing spectrum should be rehabilitated and all those below it should be demolished and reconstructed. For example in the West End Renewal Program in Atlanta, a lady from Decatur wrote the Commission that she would pay 'any price' to insure that her birthplace was rehabilitated instead of demolished and redeveloped, even if the structure was too dilapidated to be rehabilitated economically.<sup>11</sup>

Before a forecast of housing needs for the next twenty years can be hypothesized, some useful proportion of units requiring rehabilitation vs. those requiring reconstruction must be assumed. The 1960 Census Data indicated that three and one half times as many units needed rehabilitation as demolition and reconstruction. In the West End Project in Atlanta 60% of the dwelling units were rehabilitated, while only a little over 40% are being rehabilitated in Western Addition A-2. These represent very old residential areas with histories of maintenance deficiencies, the yearly rehabilitation percentage for an annual turnover should be much higher. Thus we have generalized that roughly 70% of the 7,000 recycled units per year would probably require rehabilitation while 30% would most likely require reconstruction.

Therefore of the 7,000 units/year, roughly:

2,000 units/year reconstructed,

5,000 units/year rehabilitated.

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<sup>11</sup>Galpin, Bruce., "The West End Story," Nation Cities, January 1967. pg. 20.

Synthesizing all the above information into a production chart, Fig. III-30 is created. From it we see that roughly 60,000 new dwelling units are needed for the next twenty years, 40,000 replacement units and 20,000 'new' units. Also during this period around 100,000 units will require rehabilitation.

#### Summary and Conclusions

Given the City's population does not dramatically increase much above 750,000 over the next twenty years and density remains at about 2.1, then we can expect the housing stock to plateau around 350,000 units. Residential construction will become a recycling process as all dwelling units will be injected into the housing stock either through reconstruction or rehabilitation.

The critical non-financial factor determining how many units are to be recycled each year is the age distribution of the dwellings. A turnover rate of 1.26% per year will just maintain the present age distribution of which presently 62% of the housing stock is more than thirty years old. An optimum turnover rate of two percent per year would eventually bring the proportion of the housing stock more than thirty years old down to 40%.

The major obstacle in realizing this two per cent annual turnover is the lack of funds. The demands for public funds for essential social services have become almost limitless. Clearly a huge expenditure to bring the average age of the City's housing stock a little lower, when compared to other emergency issues seems trivial. If the City's priorities include not allowing the proportion of its housing stock from getting older, then the maximum expected demand for new units in San Francisco is forecasted to be 60,000 units (40,000 replacement and 20,000 new), with 100,000 units requiring rehabilitation.

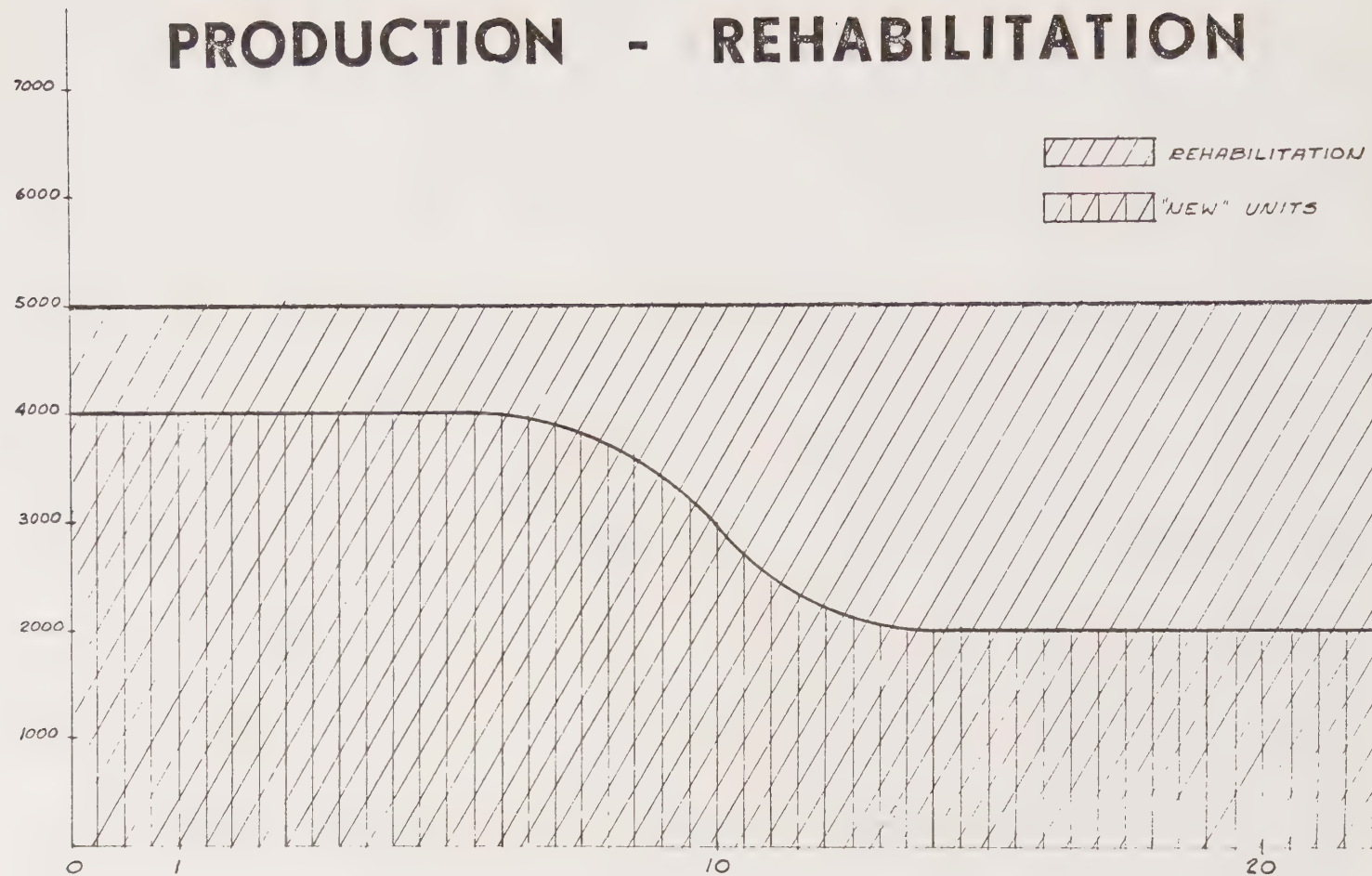


Fig. III-30. PRODUCTION - REHABILITATION CHART

b. Rough Estimate of the Cost of Complying with the Forecast

Translating the figures developed in the Housing Forecast from dwelling units into dollars help to put the housing needs of the next twenty years into perspective.

REHABILITATION (100,000 units)

Average cost per unit	\$ 10,000	Federal/local funding
Total units	x 100,000	
	\$1,000,000,000	(1 Billion dollars)

RECONSTRUCTION (40,000 units)

Average cost per unit	\$ 17,000	Including Removal not including land cost
Total units	x 40,000	Federal/local funding
	\$ 680,000,000	(680 Million dollars)

NEW CONSTRUCTION (20,000 units)

Average cost per unit	\$ 28,000	Including land costs
Total units	x 20,000	Private funding
	\$ 580,000,000	(580 Million dollars)

The sum of the three figures is \$2.26 Billion.

c. Economic and Financial Aspects of Rehabilitation

While the motivation and benefits underlying programs of housing rehabilitation are basically humanistic, the success or failure of such programs is inextricably dependent on economic relationships. Change in the housing inventory (whether new construction, renewal or rehabilitation) can be viewed as a pure financial decision; that is, as an investment outflow of funds in the present for the purpose of future inflows of benefits (rent or, more qualitatively shelter consumption). Through the financial investment model the San Francisco housing policy is viewed as the allocation of scarce resources in such manner as to maximize

the public welfare.

A brief consideration of the resources involved in the production of housing cannot but single out capital funds as the scarce resource -- be these funds government budgetary resources, owner's capital, tenant's income or the investment-seeking capital (savings) of the general public. Given sufficient capital funds availability, it is difficult to imagine scarcity of materials, labor, technology, land (insofar as it can be purchased for a price and converted into housing land use), or the desire for improving housing.

Since the problem is clearly one of limited financial resources, our solutions must be based on the most effective use of this resource. A large part of San Francisco's housing objective is the provision of 'adequate' housing for the poor and lower income segments of the population. Therefore, investment in improved housing stock must be accomplished without significant reliance on the wealth of the poor; i.e., without significant rent increase borne by poor tenants and without significant capital expenditure by poor home-owners. Landlords cannot be expected to invest in their properties without prospect of acceptable economic returns on that investment, nor can outside capital be attracted to this use without the financial incentive of profitable returns. Solutions to the housing problem must then rest upon either government financing or a revision of the fundamental economic inter-relationships of a housing investment.

We have seen the scope of the San Francisco housing crisis. Government financing (city, state, and federal) is clearly insufficient to cope with even a satisfactory solution of the problem. Additionally, the other demands placed on public funds for other government services and welfare expenditures must be recognized as both substantial -- indeed almost limitless -- and valid. The expenditures on housing

programs must be directed in such a way as to obtain maximum impact. The gap between the problem and the government's means is so large as to constitute an emergency situation. Government programs must be designed such that they apply financial resources to the most responsible parameter. Maximum leverage of government funds must be obtained.

In order to identify these 'most responsive parameters', it is a recommendation of this interface group that a model be constructed to test the sensitivity of various government programs on the economics of housing. A relatively-simple discounted cash flow model, analogous to the financial capital budgeting approach should suffice. This type of analysis serves to relate patterns of financial flows over time to one another by means of an internal rate of return. The viewpoint taken by the model will be that of the owner. The basic methodology of the model is to obtain a net cash flow associated with the property for each time period by adding all cash inflows (rents, other benefits) and subtracting all cash outflows (expenses, investment). The net cash flows for each period can then be discounted to obtain the inherent rate of return.

#### CASH OUTFLOWS

##### A. Investment Expenditures

1. Land @ market value
2. Construction costs (rehabilitation costs) -- classified in detail as necessary
3. Administrative costs (architectural, design, permits, legal fees, closing costs)
4. Relocation costs of existing tenants
5. Interim construction financing

##### B. Operation Expenditures

1. Maintenance
2. Property taxes
3. Financing charges
  - a. Mortgage interest
  - b. Mortgage principal repayment
4. Personal income taxes
5. Property management (insurance, realtor fees)

## CASH INFLOWS

- A. Rental Income
  - 1. Vacancy allowance
  - 2. Other tenant charges (damage deposits, maintenance fees)
- B. Tax Shelter Benefits (property taxes, depreciation, mortgage interest, investment credits, etc.)
- C. Property Resale Value (net of tax)
- D. Government Direct Subsidies (rent subsidy, rehabilitation grants, etc.)
- E. Proceeds From Mortgage Financing

## FACTORS AFFECTING DISCOUNT RATE

- A. Economic Return On Land In Non-Housing Use
- B. Other Investment Opportunities Available To Owner
- C. "Normal" Rental Yields In Comparable Housing
- D. Mortgage -- Effective Rate
- E. Returns On Other Government Expenditures

Once these accounting relationships are defined, the model can be used for sensitivity analysis of the various parameters to identify those which have the greatest affect per dollar. For instance, the rate of mortgage interest is expected to be one of the most sensitive variables. If this proves to be so, then government programs must concentrate on altering this variable until the point where other variables become most sensitive to change. A computer model will allow numerous permutations of this and other studies to be performed such as:

- 1. The cost of differing degrees of rehabilitation can be transformed into equivalent rent increases, other things held equal.
- 2. The economics of reconstruction and rehabilitation can be compared for various situations.
- 3. Given certain rental constraints, the amount of government subsidy required to make the project attractive to owners can be determined.

4. The impact of any government program can be determined once translated into the dollar effect on any of the above mentioned financial variables.

This model should prove to be an extremely valuable tool (1) in understanding the economic relationships in the housing market, (2) for testing alternative government programs for their impact effectiveness and (3) as a decision-making aid in determining the proper level of investment for a particular project or property.

- d. Existing Government Programs

- A. The San Francisco Redevelopment Agency

The Redevelopment Agency comes into being under state enabling legislation (California Community Redevelopment Law). It is a "temporary" organization and therefore is not tied into the city structure. The city decides to take advantage of the enabling legislation and the Board of Supervisors appoints a Redevelopment Commission to establish policy.

To get an area designated as a "redevelopment area" action is usually initiated by a group of citizens who petition the Board of Supervisors. The Board asks the Department of City Planning to "study" the area. On the basis of a report the Board designates the area.

Two-thirds of each project is paid by the Federal Government, that amount being paid directly to the Agency. The city pays one-third; in cash, services, or land. Billing is on completion of the project, so often the city does not have to come up with any cash. The city's share having had been covered by the services provided (i.e., schools, utilities, etc.). San Francisco has never had to come up with any cash since the initiation of the program in 1948, although it did once provide \$100,000 for emergency relocation.

B. The Rehabilitation Division of the San Francisco Redevelopment Agency

Mr. James Vann, Chief of the Rehabilitation Division of the San Francisco Redevelopment Agency, was very helpful in explaining the structure of the Redevelopment Agency and how Rehabilitation fits into it. He was concerned that although redevelopment has two aspects -- reconstruction and rehabilitation, the organizational structure is set-up as though rehabilitation were only a very minor function. He considers this unbalance as unfortunate.

The majority of the Rehabilitation Division's effort is directed towards The Western Addition A-2 Project. A-2's total forecasted budget is \$120 million, of which \$4 million will be directed towards rehabilitation. No actual rehabilitation work is done by or paid for by the Redevelopment Agency. The \$4 million pays only for: administrative expenses, inspections, architectural fees, arrangements for financing, etc. A flow chart and table of the steps followed by the Rehabilitation Division with each dwelling they rehabilitate is included in the appendix. An average of 600 man-hours per dwelling is required for these "assistance services" according to Mr. Vann. Estimating \$10 per man-hour would mean that an average of \$6000 per dwelling unit is spent for "assistance services."

In A-2 a total of 2,400 units are to be rehabilitated, 3,000 reconstructed and 900 newly constructed. Just comparing the allocations \$4 million vs. \$120 million, the Rehabilitation Division does indeed appear small. Yet this Division provides for the injection of 38% of the 'new' units which enter the Western Addition housing stock.

The biggest problems in A-2 are with the investor-owners. Of the first hundred owners approached, twenty-nine refused to cooperate with the Redevelopment Agency -- all were investor-owners. Only seven per cent of the dwellings and thirty-six per cent of the structures in A-2 are owner-occupied.

Post-rehabilitation rent increases have not been a problem in A-2. Only 50% of the landlords have raised their rents, and only an average of 10%. (See Appendix for costs of rental housing in the Western Addition). The reasons the remaining half of the land-lords have not raised their rents are: (1) the low cost financing they obtained averages only \$27/month per dwelling unit, and (2) they fear that a raise in rent may force some of their tenants of long standing to leave. Thus providing the possibility that their apartment may be unoccupied for a while or become occupied by some less desirable tenants. The long range 'best' way to keep rents from greatly increasing, according to Mr. Vann, is to stimulate construction of low-income federally subsidized housing.

Responding to a query about the possibility of forming a pre-apprenticeship youth employment program on the lines of the one suggested by this report (see Section F), Mr. Vann said that a similar program was tried, but was completely foiled by union non-cooperation. Other districts of San Francisco which should be declared Redevelopment Areas are:

1. The Mission
2. Bayview
3. Lower Haight-Ashbury

As far as the future of the Redevelopment Agency is concerned, Mr. Vann was cautious to commit himself. "The future of redevelopment in San Francisco," he said, "depends on what happens in the Western Addition. If the Western Addition Redevelopment Project is indeed successful, if it indeed houses the people it has promised to house, if it indeed does improve the environment of the community and the level of social services available to its residents, then the Redevelopment Agency may have a place in San Francisco."

C. FACE: Federally Assisted Code Enforcement

An area is designated a code enforcement area by the city. The Federal Government will then provide up to three quarters of the funds required to implement the program.

City inspectors evaluate each house in the designated FACE area, then present the owners with a list of deficiencies. These deficiencies are discussed with the owner along with cost estimates of the work required to remove them and bring the dwelling up to code. The owner must comply by correcting the violations or suffer penalties. If the owner refuses to comply, the city can force sale, but only under threat (or conditions) of demolition.

If the individual chooses to participate in the program, the FACE agents will assist him in financing arrangements and arranging for a contractor to do the work. If the dwelling requires extensive revision, relocation assistance is given.

This program works best in neighborhoods with primarily owner-occupied dwelling units.

(Note: All financing arrangements are separately written up.)

D. Rehabilitation Sale Under Renewal-Rehabilitation

Renewal-rehabilitation is a stronger program than FACE. Under Renewal-Rehabilitation, the Agency can force sale of the building to itself under the right of eminent domain if the owner should refuse to comply with minimum code requirements. If the owner agrees to rehabilitate, he is eligible for the same grants and loans as under the FACE program. If the owner refuses, the Agency can purchase the building under 221 (h) (Federal Housing Act) for resale to a non-profit corporation. The non-profit corporation is to sell to low-income families after the structure is rehabilitated. Under 235(j), the Redevelopment Agency can be the non-profit sponsor. As an alternative, it can resell the

house under condition of rehabilitation.

### Problems

1. Settlements under eminent domain have tended to be on the generous side of the "fair price". This not only requires more in the way of funds, it also limits the write-down on the property before sale to non-profit sponsors. Too often this means that the write-down price is higher than the maximum price the Redevelopment Agency (as non-profit sponsor) can legally pay.

2. At present the Agency has no funds to purchase housing for rehabilitation.

3. Only can operate within a designated redevelopment area.

### Advantages (over FACE)

Renewal-Rehabilitation programs provide for a much broader source of funding from the Federal Government.

1. Model Cities
2. Turnkey III
3. Section 23 -- leasing

#### E. Federal Funding

The Federal Government will provide grants and low-cost loans for the rehabilitation of dwelling units within either a designated FACE area or a designated Renewal-Rehabilitation area. (Note: All existing programs are not directed towards preventing blight, but only attempt to correct it after it becomea a problem.)

### Grants

An applicant can receive up to a \$3,000 grant (or the cost of the rehabilitation, whichever is lower) if he meets the following requirements:

1. Owns a building with one to four dwelling units and lives in one of the units.
2. Gross annual income of less than \$3,000.

3. Gross annual income is greater than \$3,000, but monthly housing expenses are greater than 25% of gross monthly income.

(Note: Under California law, a family may lose welfare eligibility (AFDC) if it receives a grant.)

#### Low-Cost Loans

Individuals can also take advantage of 3% government loans. These loans can include, not only the costs of rehabilitation, but complete refinancing of previous mortgages. The amount (for rehabilitation) can go up to \$14,500 as San Francisco is designated a 'high-cost' area. Eligibility requirements are:

1. Owner lives in building with one to four dwelling units.
2. At least 20% of the loan is applied to meeting standards.
3. Total loan can be phased over a maximum period of thirty years. The monthly payments should not exceed 20% of monthly income. Total, including refinancing of existing debt, can not be more than \$37,500.

#### F. Relocation

The Relocation program is primarily for those tenants whose homes have been designated for demolition. Only in a very few cases will the rehabilitation of a home require relocation. The dwelling is purchased by the Redevelopment Agency and tenants are allowed to live there until it is demolished. The Agency will provide the tenants with ninety-day notice before they must vacate. In the intervening period, the Agency will do maintenance work and assist the tenant in finding alternative housing that is standard, "in a good location and at a price the family can afford." If their present housing is considered dangerous for habitation, they may be temporarily moved to another Agency-owned house.

If the tenant wants to return to the neighborhood after

redevelopment is completed, he is given priority provided he meets all other requirements for occupancy. (See Agency Pamphlet in the Appendix.) Agency policy does not include phasing of work completed, because they feel it would slow down construction. Such phasing would allow tenants to move directly into completed structure, negating the need for temporary relocation.

If the family does not want to return, it is given a certificate which gives it priority in renting or buying moderate-priced housing in any other location within the city or without, public housing or private.

The Agency will help with moving expenses (up to \$200) whether the family does its own moving or has a company to do it. If they owned their own home, and buy one elsewhere (on moving) they can receive up to \$5,000 in replacement of housing payments. If they cannot find standard housing within their means, the city (mayor's office fund) will provide temporary rent supplements if the family does not qualify for federal subsidy.

e. Comparison of Rehabilitation vs. Reconstruction

In the preceding forecast-analysis we concluded that the majority of turnover of San Francisco's housing stock will be accomplished either through reconstruction or rehabilitation. The following is an attempt to identify economically, objective criterion which will help determine whether a structure should be reconstructed or rehabilitated.

Cost of reconstruction includes removing the old structure and the construction of a new one. Average construction costs for single-family dwelling units are tabulated in the Financing of Housing Phase II Report. Costs of rehabilitating a variety of structures are shown in Figure III-31.

Various factors influencing these costs are: construction costs, land costs, interim financing, mortgage rates, profit

# GEN. // REHAB. MODEL

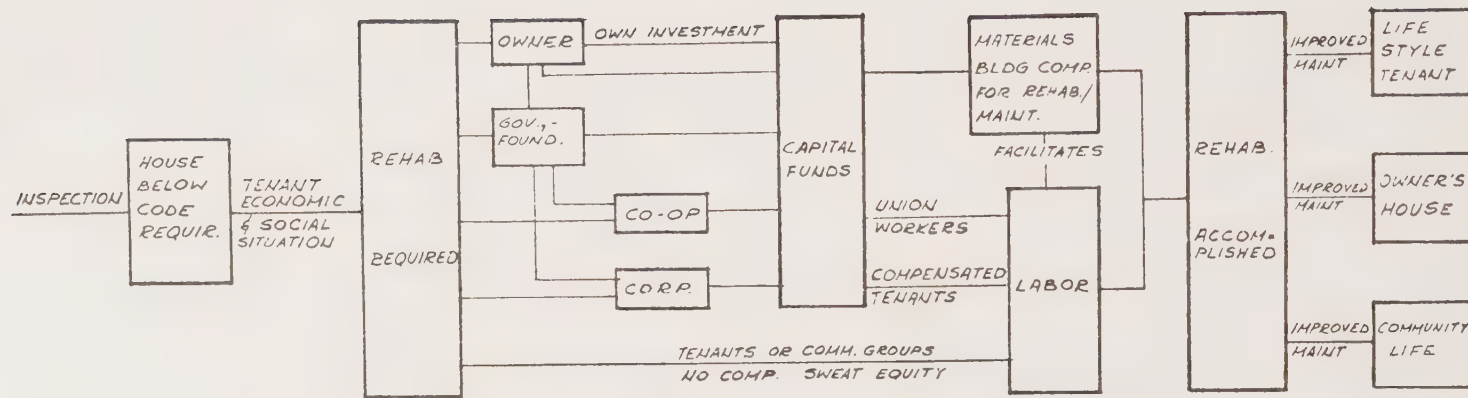


Fig. III-31. REHABILITATION COSTS

Housing Survey Area	Excellent		Good		Fair		Other	
	Mgr.	Tenant	Mgr.	Tenant	Mgr.	Tenant	Mgr.	Tenant
Outer Richmond	50%	8%	44%	46%	6%	21%	0%	25%
Inner Richmond	36	11	52	18	12	41	0	21
Marina-Pacific Hts.	49	21	30	40	18	16	3	23
Northeast	27	21	64	32	3	21	6	26
Downtown	25	14	45	36	24	23	6	27
Western Addition	45	9	24	27	2	21	29	43
Buena Vista-Tw.Pks.	10	14	70	33	14	24	6	29
Inner Mission	31	8	43	29	19	28	7	35
W. Tw. Pks.-Sunset	57	26	31	43	5	11	7	20
Potrero-Bayshore	21	12	41	18	37	14	1	56
South of Market	-	9	55	3	45	34	0	54
Bernal-Outer Mission	<u>30</u>	<u>11</u>	<u>33</u>	<u>35</u>	<u>37</u>	<u>13</u>	<u>0</u>	<u>41</u>
TOTAL	33	15	46	32	14	21	7	32

Note: "Other" includes "Needs Attention" and non-responses.

Table III-28. PHYSICAL CONDITION OF APARTMENT BUILDINGS  
AS REPORTED BY TENANTS AND MANAGERS

PROJECT	H.U.D. PROGRAM & NUMBER	LOCATION	SPONSOR	PRIME CONTRACTOR	PRODUCT	DATE STARTED	DATE COMPLETED	STATUS	TOTAL H.U.D. FUNDING	MORTGAGE	BUILDING CODE	FIRE RATING	RELOCATION ARRANGEMENT	PROSPECTIVE OCCUPANTS
CORA STREET	FHA E.H.-90	PITTSBURGH, PENNSYLVANIA	HOUSING EQUITIES, INC. (SUB- SIDIARY OF ACTION- HOUSING, INC.)	J. A. BAUTLE CO.	HABITABLE DWELLING	8/1/66	9/20/67	COMPLETED & OCCUPIED	\$238,000 221-d-3	38 YEARS 3%	WALVED		NONE	AREA RESIDENTS
DOUGLAS LAWDALE	FHA	CHICAGO, ILLINOIS	CITY GOVT. OF CHICAGO		AREA REHAB	9/67		PLANNING			NORMAL & SPECIAL REHAB STANDARDS		MOBILE HOMES	PRESENT OCCUPANTS
NEW YORK LIHD-3	N.Y. LIHD-3	NEW YORK, NEW YORK	NEW YORK CITY HOUSING AND DEVELOP- MENT ADMIN- ISTRATION	HRH CONSTRUCTION CO.	STUDIES AND REPORT	6/64	1/69 (ESTIMATED)	50% COMPLETE AND OCCUPIED; REPORTS IN PROGRESS	\$230,000 - LIHD \$459,000 - 221-d-4 \$17,875,000 221-d-3	30 YEARS 5% 40 YEARS 3%			REMAINED WITHIN PROJECT OR AREA	PRESENT OCCUPANTS & NEIGHBORHOOD RESIDENTS
INSTANT REHAB	N. Y. LIHD-4	NEW YORK, NEW YORK	INSTITUTE OF PUBLIC ADMINISTRA- TION, NEW YORK CITY	CONRAD ENGINEERS	REHAB TECHNIQUE	6/68	4/13/67 9/67	COMPLETE	1,364,759 - LIHD 597,300 - 221-d-3	40 YEARS 3%	HEATING UNIT PROBLEM		MOVED TEMPORARILY TO HOTEL	PREVIOUS OCCUPANTS

NOTE: Parentheses indicate an estimated or tentative design value. A dash indicates no applicability. Blanks indicate that the relevant data was unavailable at the time of publication.

Table III-29. DATA MATRIX FOR REHABILITATION PROJECTS

PROJECT	CHOSEN INSTRUMENT	NUMBER OF BUILDINGS	BUILDINGS COMPLETED	BUILDINGS UNDER CONSTRUCTION	TYPE OF BUILDINGS	NUMBER OF FLOORS	TOTAL DWELLING UNITS	NUMBER OF D.U. PER BUILDING	EXTENT OF REHAB.	COMMUNITY ACTION PROGRAMS
CORA STREET	<u>NON-PROFIT CORPORATION:</u> DEVELOPER CONSTRUCTION FUNDS LEASOR	3	3	0	BRICK ROW HOUSES	2	22	6 & 10	MECH. - NEW ELECT. - NEW EQUIP. - NEW ALL OTHER - REPAIRED & REFINISHED	NONE DIRECTLY ON PROJECT; VERY HIGH LEVEL IN PROJECT AREA
DOUGLAS-LAWDALE	<u>CITY:</u> 50% DEVELOPER CONSTRUCTION FUNDS <u>PRIVATE FIRM:</u> 50% DEVELOPER CONSTRUCTION FUNDS <u>NON-PROFIT CORPORATION:</u> LEASOR	126	0	0	MIXED -- BRICK HOUSES AND LOW RISE APARTMENTS	2 - 4	1000	1	TO SPECIAL STANDARDS ADOPTED FOR PROJECT	HIGH LEVEL TO BE ASSOCIATED WITH PROJECT
NEW YORK LIHD-3	<u>CITY:</u> DEVELOPER CONSTRUCTION FUNDS <u>PRIVATE FIRM (3 BLDGS):</u> DEVELOPER CONSTRUCTION FUNDS LEASOR <u>NON-PROFIT CORPORATION:</u> LEASOR	88	14	70	OLD AND NEW LAW BRICK TENEMENTS	5 & 6	1312	13 - 48	MECH. - NEW ELECT. - NEW EQUIP. - NEW WALLS - NEW FLOOR - NEW ROOF - NEW	HIGH LEVEL ASSOCIATED WITH PROJECT INCLUDING: COMMUNITY FACILITIES EMPLOYMENT UNIONIZATION
INSTANT REHAB	<u>CITY:</u> DEVELOPER CONSTRUCTION FUNDS <u>NON-PROFIT FOUNDATION:</u> LEASOR	3	3	0	OLD LAW TENEMENT BRICK	6	49	15 - 17	MECH. - NEW ELECT. - NEW EQUIP. - NEW WALLS - NEW FLOORS - NEW WINDOWS - NEW	

NOTE: Parentheses indicate an estimated or tentative design value. A dash indicates no applicability. Blanks indicate that the relevant data was unavailable at the time of publication

Table III-29

DATA MATRIX FOR REHABILITATION PROJECTS CONTINUED

PROJECT	CEILING HEIGHT (FT.)	D. U. CONFIGURATIONS	NUMBER OF EACH	DIMENSIONS (FEET)			NUMBER OF BATHS	NET AREA (SQ. FT.)	RENT (\$)			COSTS (\$)				
				LIVING ROOM	DINING ROOM	BEDROOM (S)			BEFORE REHAB.	AFTER REHAB.	UTIL. INC.	TOTAL	ACQUISITION	CONSTRUCTION	ARCHITECTURAL	TAXES DURING CONSTRUCTION
CORA STREET	8	2 BEDROOM	22	14 x 16	NONE	- -	1	850	90	92.50 - 100.00	YES	259,686	87,000	138,000	5,680	2,500
DOUGLAS-LAWDALE									93.85							0
NEW YORK LIHD-3	SAMPLE 10	PROJECTS: 1 BEDROOM	20 (** (1)				1	360 - 1050* 360	32-46	60-148* 68- 88	NO ELECTRICITY	186,000	48,000	121,000	2,000	
	10	2 BEDROOM	136 (** (5)					578		81-96		1,694,800	165,000	1,150,000	54,800	
INSTANT REHAB	10	1 BEDROOM	32	11x16	NONE	10x8	1	520 (AVE)	42-72	77-88	NO ELECTRICITY	597,300	87,000	362,000		
		3 BEDROOM	17	11x14	9x11	7x9 7x8 10x12				115-121						

- \* THESE FIGURES APPLY TO THE ENTIRE N.Y. - 3 PROJECT, NOT JUST TO THE SAMPLE BUILDINGS.
- \*\* THE FIGURE IN PARENTHESES SHOWS THE NUMBER OF BUILDINGS IN THE SAMPLE PROJECT.
- \*\*\* A CORE UNIT WAS USED WHICH CONTAINED A BATH AND A PULMAN KITCHEN. IT WEIGHED 6000 LBS. AND HAD DIMENSIONS OF 8 x 8 x 8 FEET.

NOTE: Parentheses indicate an estimated or tentative design value. A dash indicates no applicability. Blanks indicate that the relevant data was unavailable at the time of publication.

Table III-29. DATA MATRIX FOR REHABILITATION PROJECTS CONTINUED

III-308B

PROJECT	COSTS (\$)							PLAN AND PREPARATION	CONSTRUCTION	AVERAGE REHAB TIME PER BLDG.	WORK CREW		
	FINANCIAL AND FEES	H.U.D. FEES	OTHER	TOTAL PER D.U.	CONST. PLR NET SQ. FT.	TOTAL PER NET SQ. FT.	TOTAL PER GROSS SQ. FT.				SIZE	UNION	SKILL LEVEL
CORA STREET	14,628	4,029	11,828	11,700	7.40	13.8			11 MO.	4 MO.		NO	
DOUGLAS - LAWDALE									12 MO.				
NEW YORK LIHD-3	SAMPLE 9,000	PROJECTS:	6,000	7,300-18.8* 9,300	13.7-21.3* 16.8	20.2-30.9* 25.8	17.9		42 MO.	105 - 240 DAYS			
	261,000		64,000	11,690	13.7	20.2	12.2						
INSTANT REHAB			148,300	12,200	14.2	23.4				48 HRS.	344	YES	10% UNSKILLED 70% SKILLED 20% HIGH SKILLED

NOTE: Parentheses indicate an estimated or tentative design value. A dash indicates no applicability. Blanks indicate that the relevant data was unavailable at the time of publication.

\* THESE FIGURES APPLY TO THE ENTIRE N.Y.-3 PROJECT, NOT JUST TO THE SAMPLE BUILDINGS

Table III-29.. DATA MATRIX FOR REHABILITATION PROJECTS CONTINUED

III-308C

margins, tax policy, and price trends in labor and materials.

Generally, what determines the selection of rehabilitation or reconstruction is the degree of dilapidation of the unit. Exceptionally deficient dwelling units are often too costly to rehabilitate, these are usually removed and reconstructed. When the dwelling is only slightly below standard condition and the structure is sound, it might be saved by rehabilitation.

While discussing the economic aspects of rehabilitation vs. reconstruction, one can not avoid seeing the social effects opposing redevelopment.

Moving into a new neighborhood usually means higher rents and always the hassel of having to make new friends. In an ethnic neighborhood the citizen is integrated into a community which is the manifestation of many old traditions and customs -- a culture. Language is another barrier to mobility. People don't want to move from the place where their language is spoken into a community with a foreign tongue. With "good" rehabilitation the character of the community -- its life style -- can be preserved. Better houses mean better neighborhoods; and better neighborhoods better life patterns, less crime, less police, the entire community benefits. As explained by Tim Roch in Architectural Review:

A balanced community life depends on the preservation of some continuity between a city's past, present, and future and sucessfully interweaving them. For these reasons rehabilitation of sub-standard dwellings is often more desirable than sweeping them away and starting fresh.

Other variables which could make a difference between reconstruction and rehabilitation are: the average level of upgrading, neighborhood impacts, changes in land and structure productivity, subsidization of central city relative to suburbs, and social cost of slum living. The comparability, the trade-offs, the rules of choice between such a wide

variety of effects do not objectively exist. The ability to make choices in these situations depends critically on the set of values, tastes, and priorities of the agent who is to choose, or on whose behalf choice is to be made. The selection of the 'best' technique of renewing an area can only be accomplished on an individual dwelling basis.

f. General Model of the Rehabilitation Program

The integral elements of all rehabilitation endeavors are:

FUNDS

MATERIALS

LABOR

Sixty-three per cent of all residential dwelling units in San Francisco were owned by an absentee landlord in 1960. There are no indications that this proportion has changed markedly over the decade. Of the sixteen per cent substandard housing units identified by the 1960 Census, less than 15% were owner-occupied. Therefore any redevelopment model must concentrate on motivating the absentee landlord to improve his property. The flow chart shown on Fig. III-32. is a general representation of the necessary elements of rehabilitation and their inter-relationships. Following is a discussion and elaboration of the basic steps of this schematic.

Inspection

Presently San Francisco does not stringently enforce a city-wide building code. One reason according to a Mission Coalition official is that a strict enforcement of the codes would require the condemnation of fifty per cent of the structures in the Mission.

Suggestions:

- A. Establish separate codes for new construction and existing structures to enable incremental approach; i.e.,

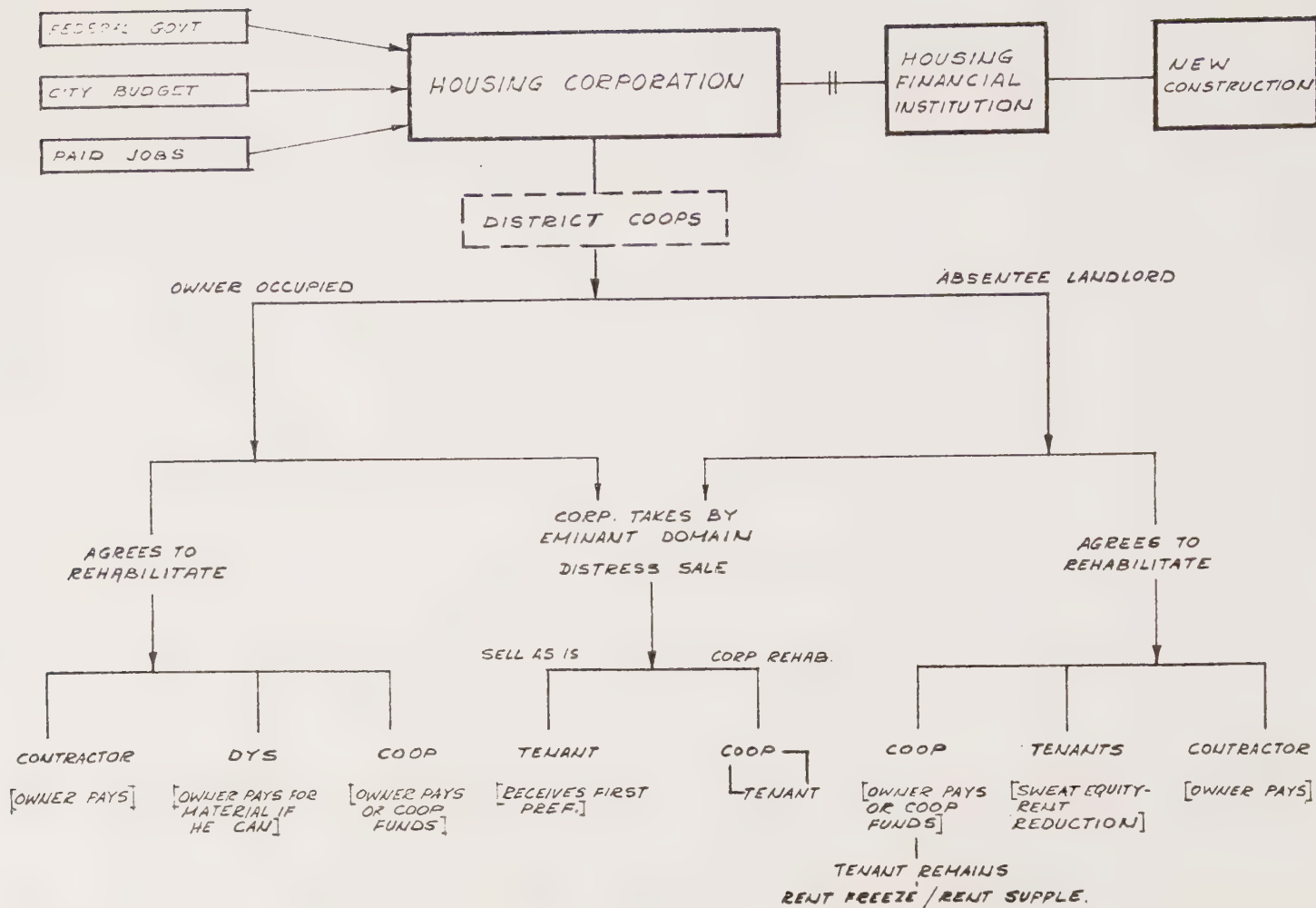


Fig. III-32. FLOW CHART OF NECESSARY ELEMENTS OF REHABILITATION AND THEIR INTER-RELATIONSHIPS

1. Insure acceptable new buildings.
  2. Identify substandard but acceptable housing.
  3. Clearly define unacceptable structure.
- B. Establish regular inspection capability (e.g., 250 inspectors working yearly cycles).
1. Computer file -- data base.
  2. Establish easily-accessible contact point for tenant inspection request.

### Capital Funds

Subsidies from the government, contributions from foundations, private investment, owner's share, and any funds collected from an organization of tenants either as a Coop or local Corporation, will be directed into a mutual revolving fund pool called Capital Fund. This fund could operate as a Mutual Fund investing its excess holdings in any endeavor which could insure a sound rate of return. The Fund will be the central dispatch office of all public funds related to rehabilitation or reconstruction of dwellings in San Francisco. It will provide for grants, low to no interest loans, etc.

The 'owner's share' will be usually difficult to obtain, as frequently he will be an absentee landlord (two to one chance). If the owner refuses to contribute on a voluntary basis he can be pressured by the threat of eminent domain, by social pressure, by certain tax incentives, etc. (See Public Finance Report, re: land only tax).

If money were provided to the owner through the Capital Fund then the Fund could stipulate a rent freeze for 'n' years. After 'n' years a rent increase to be justified on grounds other than rehabilitation. The Fund could also stipulate that the owner could not evict his tenants and sell his property for non-residential purposes for 'n' years.

### The District Coops

The District Coop shall have the responsibility to insure that all rehabilitation or renewal endeavours are in the

best interests of their members. They will provide for funding, labor and material. All district level planning would be handled by the Coop.

A. Labor

The Coop will organize a community labor pool consisting of tenants, owners, and community groups. These people will receive compensation either monetarily or through sweat equity; where they will receive a deduction in the cost of rehabilitating their dwelling if they own it or a reduction in their rent if they do not, in return for time donated to the labor pool. This community labor pool could provide a training ground for unemployed and unskilled youths and eventually provide a path for them into a steady union job. A journeyman would work with four to six of these youths for whatever time is necessary for them to secure a spot in the regular union apprentice program.

B. Services

The Coop will provide free services to the community, such as expertise, cost estimates, architectural services, funding aid, inspections, legal services, consultation -- tools.

C. Materials

Materials will be mass purchased by a central procurer and available to all the Coops.

Quaisi-Public Housing Corporation

A non-profit or minimum profit housing corporation on the district level, subsidized by the Capital Fund and credit. Members of the Board will be publically elected for staggered terms; and will not be tied completely with the incumbent city administration.

A. Additional Funding

1. Public bond placement (tax exempt, municipal status)

2. Portion of city property tax

B. Services

It will provide the same services as the Coop.

C. Assets

Buildings forced to sale under eminent domain will be acquired by the Corporation if no buyer is found on the open market, under condition that the sale will not result in the eviction of the tenants for 'n' years. The price of the property would be equal to current assessed tax base. The dispossessed owner shall retain the right to repurchase at any time said structure at a price equal to the following alternatives:

1. Distress sale price + rehabilitation cost
2. Cost + max of 'value' capitalized at highest prime rate during period of current re-assessed value of property
3. Distress sale price + rehabilitation cost + reasonable profit

D. Labor

The corporation shall employ union workers at union scales, but it will enforce an apprenticeship training program for unskilled members of the community with the objective of training them for steady union jobs.

E. Loans

The corporation shall arrange for no or low interest loans for owners meeting a certain income criterion. For others the corporation will guarantee bank financing.

Materials

Materials will be purchased by a central procurer to provide for economies of scale. Stress will be made on selecting components which can be easily installed, to minimize the degree of skill needed.

## Labor

As explained above the labor pool shall be composed of:

1. Tenants or community residents working for sweat equity
2. Community youths working in a pre-apprenticeship training program either for compensation or sweat equity
3. Union labor

Preference will be given to the unemployed, the unskilled, and youths during the summer. Because of the scattered job sites and relatively low wage scales, a large labor force

In conclusion we feel that there are no objective criteria which can be identified to make it easy to differentiate which dwellings should be rehabilitated and which should be reconstructed. For this reason we recommend an organization responsible for both reconstruction and rehabilitation. This organization would study each particular problem area, say a neighborhood in the Mission. With inputs from Community Desires, the organization could decide what type of redevelopment is necessary, economical and most in tune with the wishes of the community.

Modern industrial advances have demonstrated clearly the great cost cutting potential of mass production. We suggest that the cost of rehabilitation may be decreased substantially if the principles of mass rehabilitation were applied to the redevelopment industry.

### g. Reaction of the Mission Coalition to Some Aspects of the General Model

At present all rehabilitation in the Mission District is being done on the private owner basis. A Mission Coalition official mentioned that if the city's building codes were strictly enforced, more than 50% of the structures in the Mission would be condemned. According to the Department of City Planning over 65% of the dwelling units in the

Mission are over thirty years old. The 1960 Census showed that the city-wide average of serious substandard dwellings per hundred dwellings was 5.1, while in the Mission the number was over twenty-five per hundred.

Nor formal organization exists which is directed to the rehabilitation of absentee landlord properties. The only few cases of absentee landlords attempting to rehabilitate their units have been stopped by the Mission Coalition for the following reasons:

1. Rents would have been raised by 40%-50%
2. Lack of providing the displaced tenants any relocation facilities

Members of the Mission Coalition responded favorably to the suggestion of establishing a quasi-public housing corporation within the Mission. Since labor unions are members of the Mission Coalition, the possibility of establishing an apprenticeship training program within the Mission also looks good. All trainees though would have to be paid as any other union member.

The majority of the actual operation of the Housing Corporation will be on the district cooperative level. The District Coops would operate as semi-autonomous units working very closely with the community. The labor pool would be organized as a pre-apprentice training program working in conjunction with labor unions. It is hoped that this community labor pool can alleviate some of the growing unemployment problems in the City.

The district cooperative would be responsible for designating which dwellings should be recycled. If an owner refuses to rehabilitate, the corporation would enforce its right of eminent domain and force sale. If the absentee landlord agrees to rehabilitate at his own expense and the district cooperative suggests a rent freeze, then the corporation will have to pay for the rehabilitation and lay

claim to part of the capital gains at the time of sale by the owner.

h. Specific Suggestion -- A City-Wide Housing Corporation

We suggest that a city-wide quasi-public Housing Corporation be established in San Francisco, the establishment of which is presently legally possible utilizing the enabling legislation, declaring the entire city a renewal area. A recommended organizational structure is provided in the Appendix. The corporation will function on two levels: city-wide and district.

On the city-wide level the corporation would coordinate all housing construction in San Francisco -- new construction, rehabilitation, and reconstruction. For new construction it could be the bond issuing authority and a liaison with the Dummy Corporation recommended by the Housing Finance Group. For reconstruction and rehabilitation it could act as a coordinator of Federal grants and loans. The city may want to supplement these funds to allow rehabilitation and reconstruction to proceed at a faster rate (see Public Finance Report). For all aspects of housing it could be a central procurer of materials, providing large cost savings resulting from economies of scale purchasing. The city-wide Housing Corporation will assume many of the responsibilities mentioned under the Capital Fund segment of the General Rehabilitation Model. Funds will be received from the city budget, the Federal Government, and from individuals. The most important contribution of the Corporation will be city-wide financing -- a more efficient level than district financing.

i. Mass Production and Rehabilitation

The forecast reveals clearly that the majority of 'new' dwellings will be inputted into the housing stock of San Francisco through rehabilitation.

Though hopes existed that much of the cost of rehabilita-

tion would have been reduced by the introduction of mass produced labor saving components, conventional methods of rehabilitation still remain less expensive and thus more desirable for the present and immediate future.

Most of the research and development in this field has been directed to the design and production of components which would result in reduced labor costs either through ease of installation, which would require less skilled labor, or reduced construction time.

The trend has been to produce larger component packages which have antiquated the innovations of the past. The 2 x 4, plywood, and dry wall, all innovations of some years ago, are being replaced on some job sites by completely factory finished wall panels.

Some buildings advocate that the smallest component leaving the factory should be the completed house. Possibly the dwelling of the future will be one which plugs into a huge permanent structural network, and whenever the unit requires rehabilitation, it will be taken out recycled or disposed of and replaced by 'next year's model'.

The trend is indeed to larger and larger components, but acceptance is slow as the construction industry is such, that an innovative component will not be used freely until it becomes conventional.

#### j. Additional Comments and Suggestions

As time did not allow study into the actual rehabilitation process, provided in the Appendix are excerpts from a study done by Stanford Research Insititute which evaluates current rehabilitation practices in general.

A discussion of the prospects of reducing rehabilitation costs through industrialization of components is in the Housing Production Group Final Report.

Some important questions which must be answered before rehabilitation is commenced are:

1. How long a useful life should one rehabilitate a dwelling for?
2. Should one invest heavily and rehabilitate each structure so it could last a lifetime, or should he consider the possibility, that some components put into the structure now as 'innovations', will most likely become technically obsolete in twenty years?
3. Are we justified in planning -- in this obsolescence which will bring present costs down but may increase future replacement costs?

Suggestions for next year's group:

1. Isolate an area in conjunction with other groups and use it as a pilot project to evaluate and test your assumptions.
2. Use the Arthur D. Little San Francisco Housing Simulation Model and with existing data and develop a housing aging (Markov Process) model which could be used to predict deterioration in stock by area and analyze the impact of rehabilitation.
3. Construct a relatively simple computer information file based on building inspection reports to identify and establish cost estimates of different types of rehabilitation and reconstruction.
4. Investigate the use of public property as temporary relocation facilities for displaced tenants such as temporary buildings on government land and school facilities during the summer.
5. Due to the crisis situation in San Francisco, suspend bureaucratic provisions of housing programs which expend non-productive effort (inspection, negotiation with tenants, architectural review and design, application of pressure on recalcitrant landlords, requirements for uniformity and total coverage in an area, etc.). Devote available resources to those landlords requesting rehabilitation assistance.
6. Establish city maintenance crews by trade specialty which could rapidly move from house to house and affect stop-gap rehabilitation.

7. Require a level of maintenance expenditure (% of rent or property value) of owners on a continuous basis.
8. Require that new construction, which has been supported by public funds, be designated in such a manner as to facilitate future rehabilitation.
9. Study the effects of rehabilitation on both rents and property value appreciation.
10. Conduct an attitude survey to determine the attitudes towards rehabilitation (is it worthwhile, what type needs to be done, effects on rent).
11. Increase the building inspection labor force.
12. Establish centers for home improvement training and architectural design services to encourage self-improvement.

k. Concluding Comments

The problem of adequately housing every citizen of San Francisco is massive; we have yet to scratch its surface. Clearly its solution must also be massive.

Our feelings on this issue, parallel those expressed by the San Francisco Department of City Planning in their Summary of Building During the 60's in "Changes in the San Francisco Housing Inventory: 1969"<sup>2</sup>,

Realistically speaking, the trends of the past several years indicate the impossibility of a major breakthrough in the housing market, unless housing is recognized as a nationally needed good. No isolated technological innovations, no departmental reorganizations, no new ways to budget old money, and certainly no minute efforts on the local scale can break the national deadlock. Were San Francisco the only city to so suffer, there might be good reason to suggest that it alone should be responsible for its own dilemma. But though housing is a local product, the forces which control its production and directly affected by national events.

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<sup>2</sup>Changes in the San Francisco Housing Inventory, San Francisco Department of City Planning, April 1970.

## Appendix III-D

## SUMMARY OF THE DECADE

Shortly, the 1970 Census of Population and Housing will be taken, and its findings will provide a basis for the evaluation of many local trends in the composition of the City -- its people and their homes. It seems appropriate, in this document, to sum up a few rather general comments about the past ten years.

San Francisco Housing Stock, 1960 and 1969

A comparison of the housing stock of San Francisco in 1969 reveals that, in the overall, there has been little change in the total number of units added to the stock or in the relative standing of each structure type with respect to the total. The following table indicates numbers of units, relative percentage each structure type contributes to the stock, and the percentage of change within categories for the ten-year period.

Table III-30

SAN FRANCISCO HOUSING STOCK  
1960 and 1969

Structure Type	1 9 6 0		1 9 6 9		% Increase 1960 & 1969
	Units	Percent	Units	Percent	
Single family	110,236	36	112,326	34	2
2	37,973	12	38,021	11	-
3-4	31,546	10	32,463	10	3
5-9	33,216	11	36,961	11	11
10 or more	97,565	31	111,856	34	15
Total	310,536	100	331,627	100	6.7

Source: San Francisco Department of City Planning, 1970.

The total net change in the stock amounted to slightly more than two-thirds of one percent per year, or 6.7 percent for the decade. This small net increase may be explained not only by the fall off in housing production which occurred in the last four years, but by the simple fact that unless patterns of density are drastically altered within the City, San Francisco may be considered to have reached very nearly its saturation point. Little land remains for development, unless large areas of industrial land or land

which has been used for other purposes is committed to housing, major additions to the stock cannot be made without changes in the existing density of development.

In this respect, the slight decline in the percentage of single-family units, as a part of the whole stock and the increase in units contained in buildings of ten or more is an indication of the trend towards higher density. The largest numerical increase in housing units during the period occurred in the 10-or-more-unit building, and as a result, the number of housing units accounted for by low density (single-family homes) and high density (10-or-more-unit buildings) are equal, the remaining third of housing units approximately equally distributed in the groupings shown. Had construction trends continued for the late 1960's as they held for the first six years, the 10-or-more-unit category probably would have claimed the dominant percentage of units in the City.

#### New Construction

In the following table, the rise and fall of new construction may be seen. Bearing in mind the fact that new construction was recorded from April, 1960, the date of the Census and thus represents only three quarters of the year, the completions recorded from 1967 on are considerably lower than any of the preceeding years.

The peak year for production in place was 1964, and for the two succeeding years a high rate was maintained, until the abrupt slump of 1967. Another aspect which the figures emphasize is the tendency towards increasing density of housing units. As the years pass, fewer structures account for more units. In 1960, the average number of units per structure was 2.54; in 1969 it was 7.00. In the intervening years there is an almost regular processions of this ratio upward, indicating the change in emphasis on structural type.

#### Demolition

During the decade, some six thousand units were removed from the housing stock by the action of the private market and public agencies. The largest single category of removals was in single-family housing, with the 5-9 unit building following. Many of the single-family removals occurred during the building "boom" of the early years, 1960 to 1965, when older structures were razed to make way for apartment houses.

Demolition is a part of the normal market process. Ideally, it would be confined to the structures that are substandard and cannot be rehabilitated. However, the data gives no indication of the condition of structures removed, and, except for redevelopment areas, it cannot be assumed that removals resulted in the pruning of those 12,700 units classified by the Census of 1960 as seriously substandard. Even were this to be the case, the number of units removed

Table III-31  
RESIDENTIAL CONSTRUCTION, 1960-1969  
NUMBER AND PERCENT OF STRUCTURES AND UNITS BY YEAR

Year	No. of Structures	Percent	No. of Units	Percent
1960	728	11.8	1,850	6.8
1961	794	12.9	2,360	8.7
1962	866	14.1	3,483	12.8
1963	982	15.9	3,552	13.1
1964	880	14.3	4,638	17.0
1965	751	12.2	4,253	15.6
1966	482	7.8	3,000	11.0
1967	247	4.0	1,297	4.8
1968	242	3.8	1,403	5.2
1969	195	3.2	1,365	5.0
Total	6,167	100.0	27,201	100.0

Source: San Francisco Department of City Planning, 1970.

from stock would amount to about one-half of those units, assuming that the majority of them are beyond feasible rehabilitation. Indeed, many of the structures taken in the private market actions may have been sound, their removal dictated by economic pressure rather than their physical condition. The Table on Demolition statistics follows on the next page.

#### Net Change

The net change in the housing inventory for 1969 was the lowest increase during the ten-year period.

As in 1968, the net increase in the number of dwelling units was accompanied by a decrease in the number of structures. The pattern of increase in units and decrease in structures accentuated the trend which began in 1968. The most severe losses in both structures and units appeared

Table III-32  
DEMOLITION, 1960-1969  
NUMBER AND PERCENT OF STRUCTURES  
AND UNITS BY YEAR

Year	No. of Structures	Percent	No. of Units	Percent
1960	212	7.7	621	10.2
1961	216	7.8	481	7.9
1962	247	9.0	445	7.3
1963	356	12.9	618	10.1
1964	383	13.9	702	11.5
1965	393	14.3	799	13.1
1966	201	7.3	404	6.6
1967	204	7.4	523	8.5
1968	255	9.4	619	10.1
1969	284	10.3	898	14.7
Total	2,751	100.0	6,110	100.0

Source: San Francisco Department of City Planning, 1970

in the one, two, and three unit category. The major share of the net increase in both structures and in units was in the 20-or-more-unit category. The reasons cited in the 1968 report for the net decline in the number of structures and the small increase in units are apparently valid for 1969: (1) a rate of demolition of structures greater than new construction to replace them; and (2) a concentration of construction effort in the 20-or-more-unit building or complex. Given current market conditions which do not favor the construction of lower density housing on relatively expensive land at high loan and construction costs, this is hardly surprising. It is noteworthy that during the last year, San Francisco issued building permits for a mere 77 single-family units according to the Department of Commerce Construction Reports. Napa County, lowest in total building volume, issued 502 single-family permits; while Santa Clara County, leading in the total volume of units, issued nearly 7,000 permits alone for single-family homes.

Table III-33

## NET CHANGE IN HOUSING STRUCTURES AND UNITS, 1969\*

Structure Type	No. of Structures	No. of Units
Single family	-15	-15
2	-59	-118
3	-41	-123
4	+5	+20
5- 9	+7	+46
10-19	+6	+82
20 or more	+8	+575
Total	-89	+467

\*New construction minus demolitions.

Source: San Francisco Department of City Planning, 1970

The implication would seem to be that San Francisco's ability to provide new single-family homes in quantity has probably reached its limit, except for those areas where substantial reduction in land costs are possible.

In the following table, the net changes for 1969 are combined with the 1968 totals to produce the general housing composition as of December 31, 1969.\*

\* Building permits are recorded at issuance; the data upon which this report is based are the certificates of final completion which are issued only when the construction is completed and the building is presumed ready for occupancy.

Table III-34

## SAN FRANCISCO HOUSING STOCK, DECEMBER 31, 1969

Structure Type	No. of Units	Percent	Percent Increase 1960-1969
Single family	112,326	34	2
2	38,021	11	-
3-4	32,463	10	3
5-9	36,961	11	11
10+	111,856	34	15
Total	331,627	100	6.7

Source: San Francisco Department of City Planning, 1970.

## CHARACTERISTICS OF THE HOUSING STOCK

1. The San Francisco housing stock had approximately 218,757 apartments and 112,341 single-family dwelling units.
2. Since 1959, 26,918 units have been constructed in the City: 23,076 apartments and 3,837 single-family units. When the demolition of 3,689 apartments and 1,549 single-family units is subtracted, the net addition to the City's housing stock was 21,675 units: 19,387 apartments and 2,288 single-family units.
3. Housing construction in San Francisco reached a peak for the decade of 4,638 units per year in 1964. In 1968, 1,406 units were completed; annual net additions to the stock in 1964 and 1968, allowing for demolitions, were 3,936 units and 778 units respectively.
4. The 1960's trend towards construction of multi-family dwelling units may be in part attributable to the changing characteristics of the City's work force. San Francisco is in transition from a mixed economy, with significant manufacturing activity, to one in which finance, insurance, real estate and corporate head office activities predominate. Not only the housing, but the associated recreational and traffic circulation implications of these economic changes, warrant further detailed examination. The high percentage of young adults in the national population, central city space limitations and rising land and construction costs have reinforced this trend.

If the City's "corporate head office" role is to expand successfully, not only the requisite office space, but also the requisite residential space at the appropriate rent level and of the appropriate unit type and location must be developed.
5. Approximately 21.2 percent of the occupied apartment units in the City rent for less than \$90 per month, and 11.6 percent rent for \$200 per month or more. Approximately 4.6 percent of all vacant units rent for less than \$90 per month, and 12.8 percent for \$200 or more. The household with very low and the household with very high rent-paying ability may face a more limited range of choice of apartment units than the households closer to the City-wide median level of rent-paying ability.
6. While a high percentage of the multi-family housing stock is over 30 years old, the condition of the stock, as reported by those who occupy it and those who own and manage it, is generally good to excellent.

7. There is a serious shortage of private and public low-cost housing for large low-income families, senior citizens, and college students. These groups, of necessity, compete for the available space in low-cost projects. Ideally, more consideration might be given to the unique housing needs of each of these groups.
8. Obtaining space in public housing, in common with the more attractive units offered by the private housing market, generally involves a waiting period of a year or more.
9. An examination of the ownership patterns of multi-family units shows that most of the stock is owned by individuals located in the same area as the building. Non-local corporate ownership is more common among recently constructed, large-scale, high-rise complexes.
10. Many San Francisco apartments and apartment buildings provide a short-term place of residence for people moving to the San Francisco Bay Area from other parts of the nation. Buildings serving this role frequently have a tenant turnover in excess of 40 percent per year.

#### CONCERN FOR THE NEIGHBORHOOD

1. In the survey, the respondents were given a choice of items they considered the most unsatisfactory for their neighborhood. The response to these items indicates that for nearly every area surveyed, traffic-related problems received the most mention. Inadequate on-street parking, traffic and street noise, and traffic safety, in that order, were the major complaints. Of least concern to residents was the adequacy of fire protection service, proximity of hazardous lots, buildings or factories, and the condition of streets and sidewalks.
2. An open-ended question and the field experience of the consultant provided more information about the complaints and concerns of residents and the advantages of neighborhoods than could be included in the structured questions analyzed above.
3. Problems relating to the physical condition of the housing stock are subordinate to other environmental problems reported by the majority of San Francisco residents. Social problems of crime and violence; traffic safety; pressures on available parking caused by new commercial ventures in previously residential areas; unsightly vacant lots and utility poles; and the "noise pollution" by vehicles, dogs, children, and neighbors are more

critical to many San Franciscans than problems associated with the physical condition of the housing stock.

#### Age of Structures

In 1960, 95 percent of San Francisco's substandard or seriously substandard housing units were more than 30 years old and 99 percent were more than 20 years old. Not all older property is in poor condition, but keeping it in good condition requires more maintenance and repair than is required for newer housing. For this reason, the age of the City's housing units is of serious concern.

#### High Percentage of Rental Households

In 1960, 65 percent of the housing units were rental units -- one of the highest percentages of any major U.S. city. This situation poses a potential problem, since experience indicates that housing standards in rental structures tend to be lower than in owner-occupied structures. Persons who own the homes in which they live are more likely to maintain them well than are absentee landlords likely to so maintain their rental properties. According to the 1960 Census, single-family-owned and occupied structures constituted 28 percent of San Francisco's housing stock, but only 5 percent of the substandard housing. In contrast, 11 percent of the one-to-four-unit renter-occupied structures were in substandard condition and 3 percent of them were in seriously substandard condition. The number of renter-occupied structures is likely to increase in the foreseeable future. This will require public policies designed to induce the owners -- be they resident in San Francisco or elsewhere -- to maintain and when necessary improve their properties.

#### High Cost of Housing

Serious deterrents to the construction of new housing in San Francisco, particularly for the lower- and moderate-income groups, are the high cost of land and the high cost of construction, particularly in hilly areas. The cost of rehabilitating existing dwelling units is also high. If the City's housing and renewal goals are to be met, financial aids will have to be provided to developers of certain types of housing for specially disadvantaged groups, and to landlords of existing housing to allow them to rehabilitate their property.

#### Residential Segregation of Racial and Ethnic Minorities

The tendency to segregate racial and ethnic minorities forces these groups to pay an inordinate proportion of their income for housing. The supply of housing available to minority groups is restricted, causing available structures to become overcrowded and higher-than-normal rents to be established. It also makes it possible and profitable for

certain landlords to maintain substandard facilities. Minority groups are disadvantaged in their efforts to find decent housing, and the number of substandard and ultimately serious substandard housing is significantly increased. Unless the housing market is open to all racial and ethnic groups, the limited supply available to them will continue to be of poorer quality.

#### Limited Concern for Housing Quality

Census information indicates that many occupants of low-rental housing pay a relatively low proportion of their income for rent. A significant number of these occupants probably could increase their rent to obtain standard housing and still not suffer financial hardship. The reason they do not is indicated by some of the findings of our special study on Renewal Attitudes. This study revealed that many people have limited concern for the quality of the physical environment and hence may pay comparatively little for housing. This limited concern hinders a continued improvement of the housing stock.

#### Taxation Policies

San Francisco relies heavily on the real property tax for its revenues. The ratio of property taxes to total revenue is one of the highest in the state. Moreover, the burden of taxation is tending to fall more heavily on the improvements on the land than on the land itself. With this trend and the threat of the increasing tax rate, owners may be reluctant to improve their property, fearing that the increase in taxes will nullify the benefits of the improvements. This is particularly important in connection with substandard property, since the value of the improvements is low and the value of the land may be increasing.

#### High Cost of Investment Capital in Declining Areas

Owners of property in declining areas find it very difficult to obtain the capital required to rehabilitate or remodel their property. This denies to such owners the opportunity to increase their income by upgrading their property. Consequently, many owners seek additional income by further subdividing or undermaintaining their property, or by over-crowding existing living quarters. The result is aggravation of an already deteriorating situation. If San Francisco is to be successful in maintaining and upgrading its residential environment, means must be found for property owners in these areas to obtain reasonable financing for housing improvement.

#### Reluctance of Property Owners to Act Individually

Significant improvements in housing require more than individual action. Many individuals refuse to improve their

property because there is no indication that others in the neighborhood will do likewise. The value of any one property depends in great part on the quality of the neighborhood in which it is located. Unless potential investors are convinced that their effort would be part of an active program to upgrade the quality of the entire neighborhood, they are unlikely to invest in any improvements to their properties, and the entire neighborhood will continue to deteriorate.

#### Lack of Knowledge and Experience Regarding Home Improvements

Many inexperienced owners need advice on how to make satisfactory and economical improvements and on how to select a reliable rehabilitation contractor. The lack of knowledge may be a sufficient deterrent to turn a general desire and willingness to improve housing into inaction.

#### Environmental Deficiencies

Serious environmental and amenity deficiencies detract from the desirability of many areas and inhibit homeowners' willingness to invest in property improvement. The success of efforts to encourage homeowners and owners of rental property to invest more in housing improvements will depend in large part on the City's willingness to do its share by investing in public improvements designed to correct these environmental deficiencies.

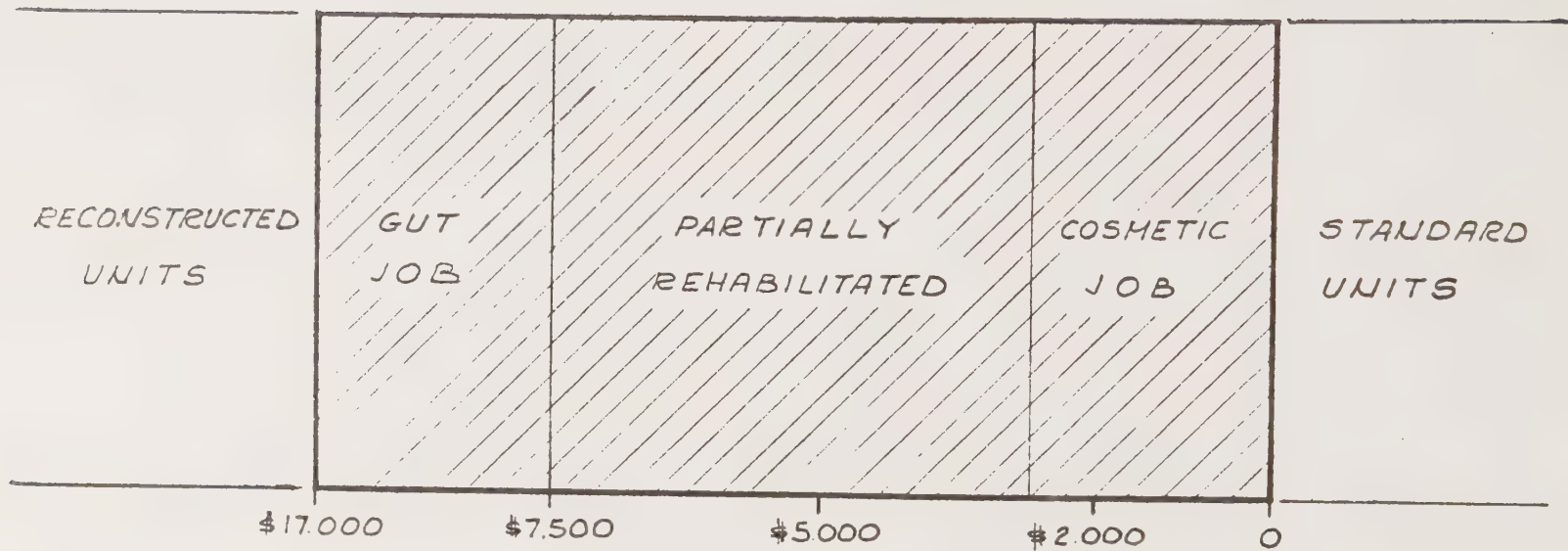
## CONCLUSIONS AND IMPLICATIONS

As noted in the 1968 report, the combined public and private housing effort is not adequate to meet the goals set by the 1965 Community Renewal Program report, either in the provision of new housing or in the elimination of substandard units. The trend first noted in 1967 continues, housing completions decline and housing removals increase. For practical purposes, the addition of 1,365 housing units by new construction can accomplish little towards the easing of what is, demonstrably, a crisis in the housing market. Although low- and moderate-income families are the first to suffer in the present market, it must follow that with such a low rate of production, further diminished by removals, it is almost impossible to satisfy any part of the demand for housing.

This situation is, of course, not local. It is a part of the national crisis in housing, one considered by experts to be paralleled only by the immediate post-war years. The Mayor of San Francisco has testified before Senate committees on the seriousness of this problem. Citizens' groups have made their discontent known, and the publicity accorded housing in the past several years should make it a national concern, if the voluminous reports are heeded. Local public agencies, attempting to renew the stock of housing, are pressed by those within project areas to provide housing before displacement, and at prices they can afford. The same agencies seeking funding from Federal sources, the only available cash resource, are informed that appropriation for housing will be minimal, and that the level of present programs may, with luck, be maintained. Cities are being urged to find solutions within their own bailiwicks and not to rely on "outside" help. If the miracle of renewal to accomodate all people is to be performed, according to the current view, it must be performed first, "at home".

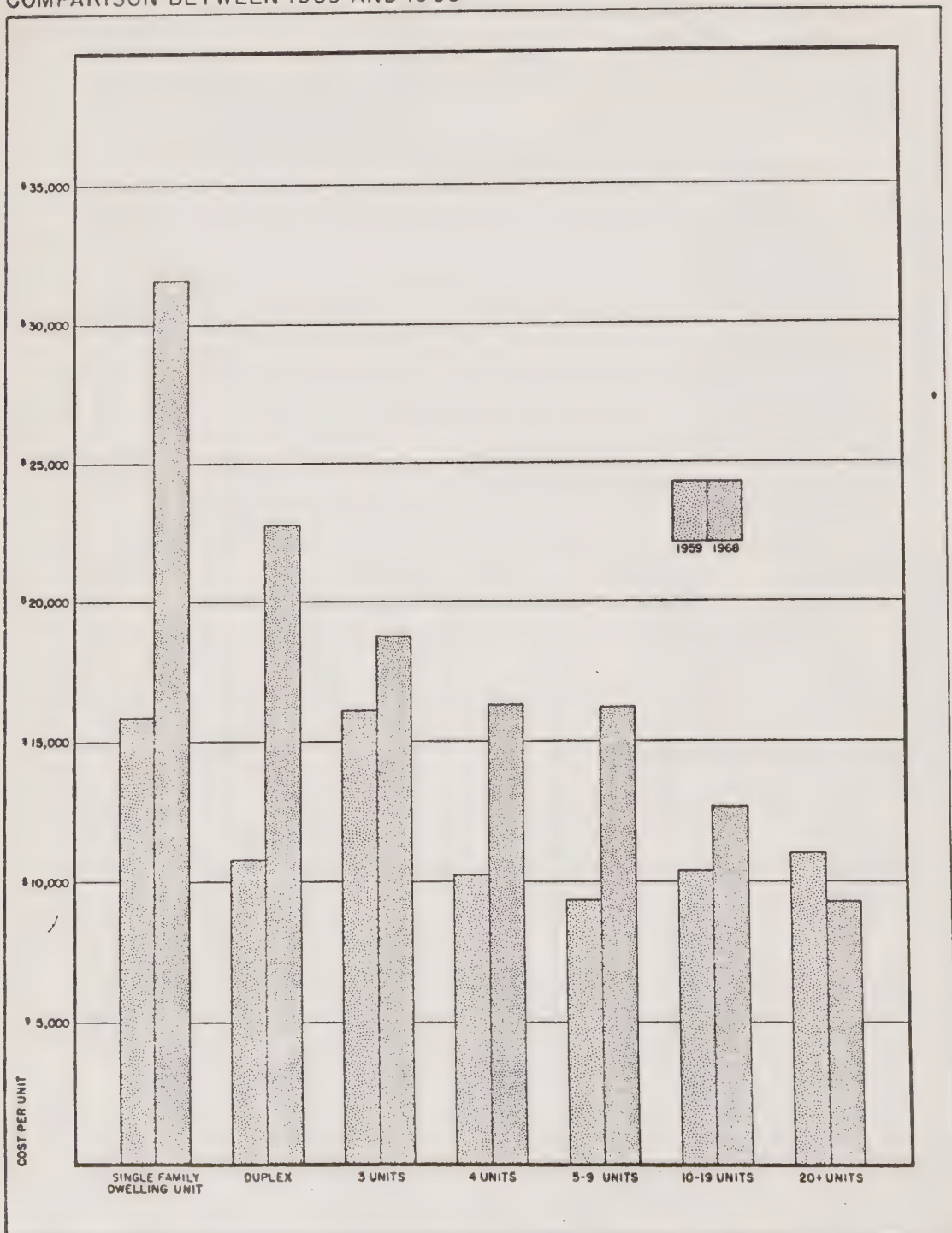
Realistically speaking, the trends of the past several years indicate the impossibility of a major breakthrough in the housing market, unless housing is recognized as a nationally needed good. No isolated technological innovations, no departmental reorganizations, no new ways to budget old money, and certainly no minute efforts on the local scale can break the national deadlock. Were San Francisco the only city to so suffer, there might be good reason to suggest that it alone should be responsible for its own dilemma. But though housing is a local product, the forces which control its production are directly affected by national events.

## ROUGH REHAB. COSTS



# Appendix III-G

## UNIT COSTS BY BUILDING SIZE IN SAN FRANCISCO COMPARISON BETWEEN 1959 AND 1968



Source: David Bradwell and Associates, Survey for Department of City Planning, 1969

# Appendix III-H

## RENT DISTRIBUTION OF DWELLING UNITS IN MULTI-UNIT BUILDINGS

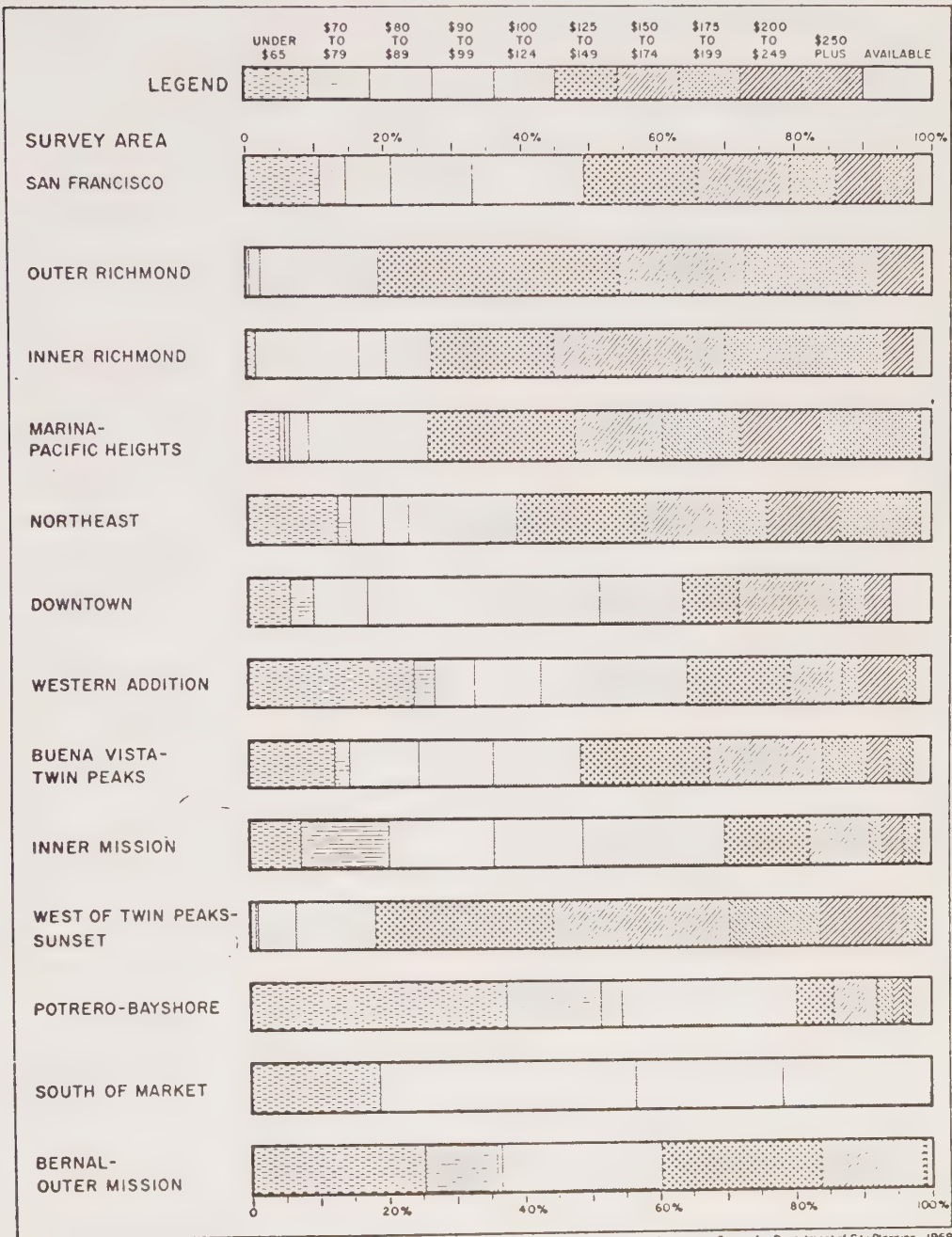


Figure III-35. RENT DISTRIBUTION UNITS IN MULTI-UNIT BUILDINGS

## REHABILITATION BY CONVENTIONAL MEANS

General

Before considering conventional, currently used practices for rehabilitation of Oakland's public housing units, it seems wise to first evaluate rehabilitation of housing on a broader base. With an understanding of past experiences concerning the types of projects, the cost involved, the contractor relationship, the construction materials used and general problems faced in completing rehabilitation projects in various parts of the U.S., the Oakland Housing Authority's program can be benefited.

In response to the high incidence of substandard housing, the federal housing acts since 1949 have been largely directed toward assisting communities in attacking urban decay and slum problems. Between 1949 and 1968 some \$6.4 billion in federal funds were allocated for the purpose of assisting over 2,300 separate rehabilitation projects in 954 communities. During this period, private enterprise has progressively entered into partnership with all levels of government in attacking the problems associated with rehabilitation projects. Corporations have been formed whose purposes are devoted to serving the housing needs of families of low and moderate income. Examples are given below.

. As an example of industry cooperation, the Allegheny Council to Improve Our Neighborhoods (ACTION-Housing, Inc.) was organized by industry and government in Pittsburgh, Pennsylvania, in an effort to provide a vehicle for the mass rehabilitation of housing in aging Pittsburgh neighborhoods. Subsequently, ACTION-Housing, Inc. formed an operating company known as the Allegheny Housing Rehabilitation Corporation (AHRCO)\* whose purpose is to acquire housing in need of rehabilitation, arrange for interim financing, secure architectural services, and perform or contract for the rehabilitation of the housing units.

. The Camden Housing Improvement Projects (CHIP) Corporation\*\* has just completed about 18 months of operations in an effort to rehabilitate housing in the Camden, New Jersey area; about 150 houses have been completed or are under process.

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\* About 30 Pittsburgh companies, including PPG Industries, Koppers, U.S. Steel and Westinghouse in cooperation with local, state, and federal agencies have combined to make up the basic AHRCO organization structure.

\*\* The Board of Directors of CHIP includes top executives from the Campbell Soup Company, the Radio Corporation of America, the Camden Trust Company, the Dorrance Foundation and The First Camden Trust Company.

CHIP is a nonprofit corporation and has as its goal the rehabilitation of housing at the lowest possible cost for sale to families of limited income.

. In New York, a nonprofit organization, Community Improvement Corporation of Manhattan (CICOM) has undertaken the renewal of 450 housing units in central Harlem. Two philanthropic foundations have combined to sponsor the CICOM project.

. In Boston, the Boston Rehabilitation Project (BRP), has recently been formed for profit by five local developers. This venture is proving successful and, when combined with a smaller rehabilitation project currently underway in Boston, constitutes a total of 2,800 apartment units at a rehabilitation cost of \$32 million, or approximately \$11,500 per unit.

. A number of major corporations, such as Alcoa, Armstrong Cork, Rockwell Manufacturing, Reynolds Metals, U.S. Steel, and Smith, Kline, and French are making experimental ventures into rehabilitation. U.S. Gypsum is rehabilitating or has rehabilitated several hundred units in Harlem and plans similar projects in Cleveland and Chicago.

Since 1965, Cincinnati's Department of Urban Development has been hiring the youth of the city in rehabilitating substandard homes. Union foremen, each recruited from the respective construction trades, work with a crew of six youths. This program is a pre-apprenticeship program for the essentially unemployed, designed to help youths enter the construction labor market.

Currently about 40 contractors are working on the rehabilitation of 2,600 houses in Philadelphia's housing rehabilitation program. In another venture, National Gypsum has formed a partnership with a builder and a real estate broker to demonstrate that rehabilitation by private enterprise is economically feasible. The experience being gained by materials' manufacturers is invaluable to the national rehabilitation effort.

### Types of Rehabilitation Projects

Rehabilitation projects are classified according to the extent of the construction work required. Three general categories usually referred to in the construction trade are: (1) cosmetic job, (2) partial rehabilitation job, and (3) gut job.

The COSMETIC JOB is performed when a minimum level of rehabilitation is required. It refers to projects in which such items as only painting or surface repair may be required, or hardware may need replacing.

The GUT JOB is performed when a building is dismantled or stripped down to the wall studs and to the floor and ceiling joists. Along with new walls, floors and ceilings, often a new plumbing and electrical system may be installed.

This type of rehabilitation almost always calls for the kitchen and bathroom to undergo complete remodeling.

The PARTIAL REHABILITATION JOB is one where rehabilitation is at a level somewhere between a cosmetic job and a gut job. A broad range of possibilities occur in which walls or ceilings may be patched or replaced, or a structural system may be improved. This classification is applicable to the Oakland Housing Authority's proposed program.

The degree of rehabilitation required is closely correlated with the age of building and the quality of the initial construction. For example, buildings over 40 years of age would likely require a significant amount of electrical demand. Today's high use of electrical appliances and the extensive use of wall plugs necessitates a room by room upgrading of the electrical system, even in units that may be as new as 25 to 30 years of age.

#### Rehabilitation Cost Trends

The total cost of recent, new public-assisted housing have run between \$17,000 and \$21,000 per housing unit. By comparison, in cities such as Boston, New York, Chicago, Washington, and Philadelphia, gut job rehabilitation has been running about \$7,000 to \$15,000 per housing unit and possibly higher. Partial rehabilitation jobs tend to be in the range of \$3,000 to \$6,500 per unit. Cosmetic jobs generally cost under \$2,000 per unit.

Construction costs will continue to rise and therefore are of serious concern in the financial planning of the OHA project. The rising construction costs are one of the basic factors in deciding whether to complete the OHA project in a relatively short time with a large contractor experienced in rehabilitation, or to extend the project over more time and use smaller contractors or local tradesmen. Figure III-36 suggests that we can expect about a 4 percent annual increase in construction costs in the Bay Area. Over the next five years this has the effect of a 22 percent increase.

Also, rehabilitation is much more difficult than new construction. Because of the contingencies built into rehabilitation it will likely remain higher in cost than new construction. Three cost contingencies normally associated with rehabilitation projects are designed to cover (1) unforeseen construction difficulties, (2) government red tape, and (3) the labor learning period.

The unforeseen construction difficulties can arise when a contractor guts, or even partially opens, a building and discovers different wall construction or a different plumbing system than was assumed. The red tape and volume of paper work on federally financed projects can be burdensome. Process delays of 18 to 24 months or more, as well as indecision and haggling over extra work is often encountered. The costs to the contractor associated with labor learning

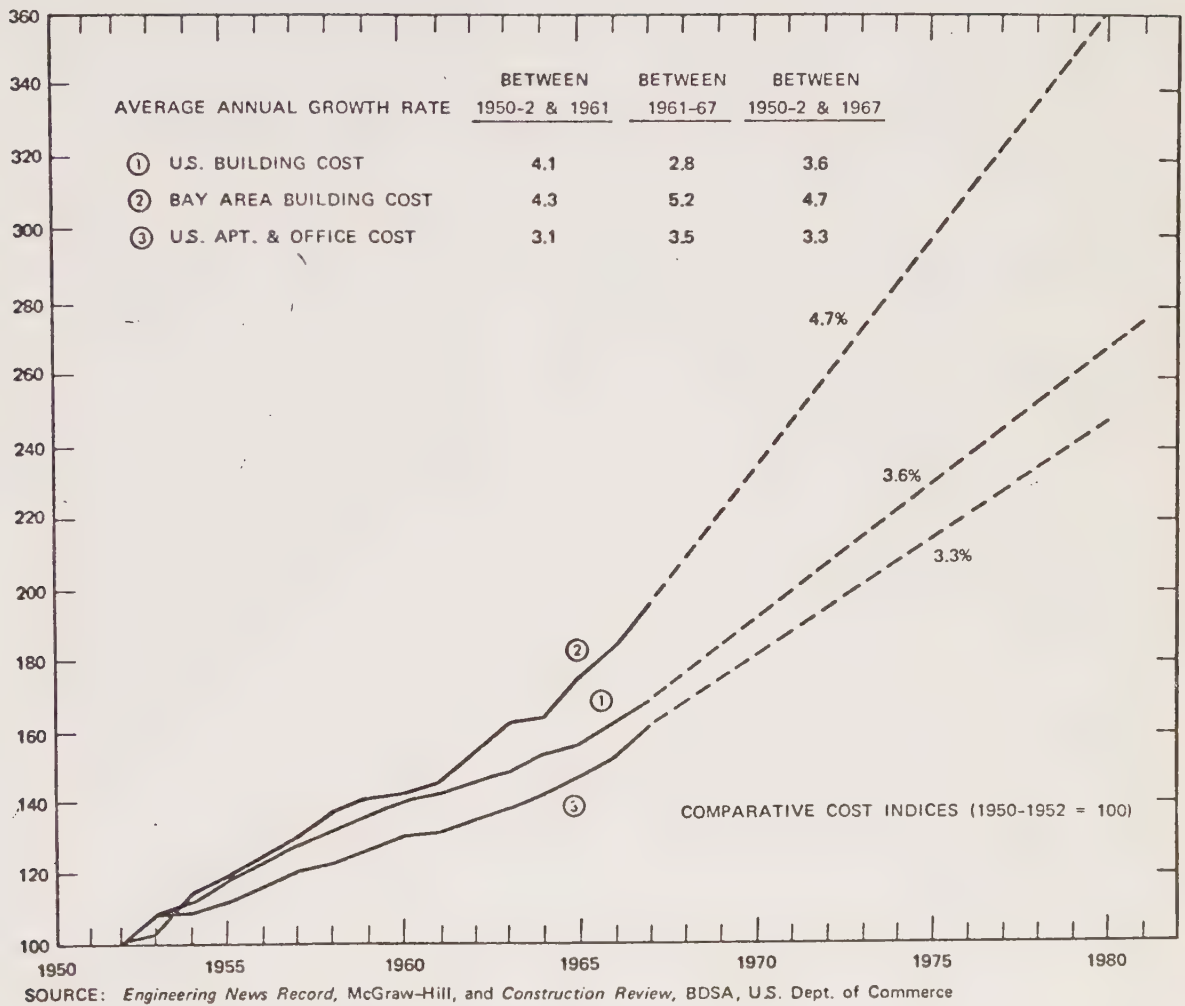


Figure III-36. CONSTRUCTION COST FORECAST

become critical when the use of untrained workers is imposed on a project in an effort to employ the maximum in neighborhood labor. On the other hand, as rehabilitation contractors develop their own crews of experienced administrators, supervisors, and skilled laborers, costs tend to be reduced. These reductions come about through specialization as the rehabilitation contractors develop new techniques and discover appropriate products and suppliers.

Most successful rehabilitation projects concentrate on supplying the basic needs. Restyling a building, realigning walls, or adding a prestigious front are costly; to date few rehabilitation jobs have afforded the luxury of nonfunctional improvements.

An example of the cost per apartment unit for a PARTIAL REHABILITATION JOB is itemized in Table III-35. The costs of two GUT JOBS are summarized in Table III-36. Although the presented cost figures are New York 1966, the time and location index (Figs. III-36 and 37) can be used for conversion to 1969 San Francisco Bay Area costs.

The cost of labor and the manner in which that labor is employed substantially influence overall rehabilitation costs. An example of how high-volume rehabilitation work resulted in excessive rehabilitation costs was dramatized in the crash rehabilitation of 49 old-law (built before 1900) tenements units in New York City in 1967. These units were gutted and restored within 48 hours by working around the clock. The job consisted of lowering into each unit, through roof ports, mechanical cores containing a three-fixture bath and a three-fixture kitchen; the wiring of electrical outlets; and the installation of new doors, windows, vinyl-covered sheetrock walls, finished wood-chip particle board floors, and suspended mineral board ceilings.

The resulting construction costs were about \$45 per usable-square-foot for this project as compared with \$18 per square-foot for rehabilitating similar old-law tenements on a conventional schedule. These extremely high costs on the 49 units resulted from: (1) the need to pay double-time rates for 60 percent of the labor, (2) lack of possible economies due to bulk material purchases, (3) lack of firm bids on the part of subcontractors due to concern over short time construction deadlines, and (4) the high cost of the required heavy construction cranes used to locate the mechanical cores.

Although the costs were high, this project did demonstrate that a systems approach using critical-path scheduling plus carefully selected materials can drastically cut the time required for rehabilitation, even if not as extreme as the recited reduction of time to 48 hours. Further, the time during which residents would need to be temporarily housed during reconstruction is substantially reduced, reducing relocation costs and tenant inconvenience accordingly.

Table III-35  
EXAMPLE OF PARTIAL REHABILITATION JOB  
MINIMUM REHABILITATION  
COST ESTIMATE

<u>Work Item</u>	<u>Average Cost per Dwelling Unit</u>
Interior painting (including a portion of public areas)	\$ 150
Repair or replacement as necessary of apartment entry doors and hardware	85
Complete re-piping, including new bath- room fixtures (domestic water)	1,000
Complete re-wiring, including mail box bells and entry buzzer control	750
Minor floor leveling, as necessary	50
Stair repairs	10
Bathroom finish repairs (plaster, tile, flooring)	30
New bathroom accessories (cabinets, etc.)	30
New kitchen equipment/associated repairs	500
Repair or replacement of windows/frames	200
Miscellaneous repairs	100
Roof patching	50
New heating system, including new piping/ radiators (oil fired hot water)	600
New bathroom fixtures	225
Combined entry control unit, including mailboxes, lock, bells, and buzzers	20
New radiators (only)	60
Total	<u>\$3,860</u>

Sources: John Bailey and Harvey King, "Housing in Harlem,  
The Potential for Rehabilitation and Vest Pocket  
Construction," and Stanford Research Institute.

Note: Costs are New York-1966; conversion to 1969 San  
Francisco Bay Area costs can be made by referring  
to Figures III-36 and 37.

Table III-36  
EXAMPLE OF GUT JOB  
Extensive Rehabilitation Costs

Work Unit	Example 1	Example 2
	Cost per Dwelling Unit	Cost per Dwelling Unit
Excavation	\$ 20	\$ ---
Concrete	30	---
Masonry	760	830
Membrane waterproofing	42	50
Concrete floors and cement	210	100
Rough carpentry	860	860
Finished wood floors	500	360
Carpentry and millwork	467	480
Windows	692	460
Doors	300	190
Stairs	83	160
Misc. iron and steel	80	80
Lath and plaster	1,100	850
Insulation	20	30
Roofing	200	130
Sheetmetal	83	20
Paint	150	150
Finish hardware	41	30
Tile and bathroom fixtures	550	360
Linoleum	33	30
Weatherstripping and caulking	20	20
Kitchen equipment	560	520
Medicine cabinets	20	20
Plumbing and hot water	1,100	1,100
Heating	700	600
Electric wiring	800	700
Window shades	20	30
Demolition	300	300
Subtotal	9,741	8,400
Contractor's profit	974	840
Architect's fees	857	762
Total	\$11,572	\$10,002

Note: Costs are New York-1966; conversion to 1969 San Francisco Bay Area costs can be made by referring to Figures III-36 and 37.

Sources: John Bailey and Harvey King, "Housing in Harlem, The Potential for Rehabilitation and Vest Pocket Construction," and Stanford Research Institute.

Figure III-37. INDEX OF COMPARATIVE BUILDING COSTS,  
DECEMBER, 1968  
NATIONAL AVERAGE FOR 1967 - 100



*Boeckh Building Cost Modifier*, Boeckh Division, American Appraisal Co. Index for Reinforced Concrete Frame Office Buildings, Hospital Buildings and Similar Occupancies with Substantial Amount of Interior Finish and a Complete Line of Building Service Systems.

The Pittsburgh urban renewal authority has also utilized a computerized critical-path system to develop time schedules in an effort to reduce the average time-in-process for each rehabilitation project. The network of separate activities is developed around the maximum amount of time that can be allowed for the completion of each element of the project. By establishing a critical path, or sequence of events, considerable savings are being realized in the long run by increased efficiency. Relocation of residents during the construction phase is one of the key items that is scheduled. The use of critical-path scheduling is estimated to cost about one-half of one percent of the project's total costs. Its use is generally dependent on the size of project and the size and capabilities of the contractor. (The subject of contracting the OHA project is discussed subsequently.)

### Construction Materials in Current Use

This section deals primarily with conventional building materials currently available, as well as with the methods currently employed by labor. It may include those materials traditionally used and may include new products, recently placed in use, that offer some originality to the rehabilitation process.

The information and data collected for this section resulted from discussions and interviews with Housing Authority officials, government officials, general contractors, subcontractors, materials manufacturers and materials representatives over the past 12 to 18 months and therefore is representative of current thinking. Descriptive produce literature and cost data is available in the housing research data files at SRI and was used, where appropriate, in selection of the capital improvement program rehabilitation items for Oakland.

By and large, experience in today's rehabilitation industry suggests that the most practical and economical method of rehabilitating structures is to select proved conventional construction methods and materials. New methods have often priced themselves out of the competitive picture. As no two rehabilitation projects are identical, there are no set standards or pat methods of solving rehabilitation problems. Each project should be analyzed separately.

Because of the continuous ownership of its properties, it is necessary for the authority to place emphasis on the need for materials with high durability and low upkeep, as opposed to selecting a material on the basis of initial cost alone. Rehabilitation experience in public multifamily housing suggests that quality and long wear should be basic considerations in selecting materials subject to tenant contact, such as hardware, floors, interior walls, windows and porches. The best quality, commensurate with budget limitations, should also be provided in the electrical system,

the plumbing system, and in the kitchen and bathroom fixtures and equipment. Experience has told us that "temporary" or "short term" almost always evolves into "permanency" and extended useful life. In contrast, elements generally divorced from tenant contact, such as the roof and exterior walls, serve as examples of areas that are simply weather-tight, and cost effectiveness is minimal from a tenant standpoint.

The following discussion is more or less a summary of the types of materials for, and methods of, solving selected rehabilitation problems as applied to a spectrum of rehabilitation projects in the U.S. The experience gained on such projects warrants examination only as a prelude to selecting building products for the OHA project.

Variable Octagonal Highrise

This system for highrise construction is based upon octagonal modules arranged such that both "positive" and "negative" spaces are created and that both can be utilized as living space. There is an almost unlimited variety of arrangements possible with this chosen module and equal variability of the exterior appearance. This design was developed in the hope of providing an alternative to the typical box or cube as a living space, of creating interesting common areas for interaction among building occupants, and of competing economically with conventional "stick" construction.

The basic module is an octagon 8' 3" on each face. It is cast of concrete on the site and is hoisted into place with a large crane. The key to this system is that each module is half of two apartments, one above the other. A 6" slab doubles as a floor and a ceiling and is integral with half of the walls of the apartment above and half of the apartment below. When arranged with other modules and properly related, "negative" spaces, which are octagonal in shape, are formed between the modules and are the same size as the "positive" spaces, since each face is part of an adjacent module. Although these negative spaces are enclosed by walls, the floor/ceiling slabs are missing and these, too, are cast on site before hoisting into place. With the proper steel inserts in the floor slab and apartment module, the two parts can be welded together once they are in place. With well engineered steel forms, it is hoped that this system's components can be assembled to within a very close tolerance.

The complete module ready to be hoisted into place weighs approximately 30 tons, and the floor/ceiling slab about 12 tons. The large components would go together very quickly and would be complemented with other precast components

which would handle stairs, bathroom fixtures and mechanical service, kitchen mechanical services, kitchen cabinet and counter unit, terrace and balcony units, window sun-shades, and flower bed units. Many of these components are important in the development of the "positive-negative space" concept referred to previously. Each of the bathroom, stair, and kitchen core units is composed of a square floor 8' 3" on a side and most have two side walls formed in the same manner as the living modules. These units are assembled by welding, just as the floor/ceiling slab is in the "negative" living module.

Since upper floors are identical to the ground floor in modular arrangement, all mechanical service shafts run vertically for the full height of the building. Bathroom and kitchen units are easily plumbed into these shafts since they are both set in place when a particular floor has been installed and walls are only four feet above the finished slab. Services are then extended one additional floor vertically and the above layer of modules set in place.

Terraces are floor slabs with a railing and either one or no walls and are welded in place on three sides. Flower beds are also precast, triangular in shape, and welded. Sun-screens are attached to two assembled modules and cover the window opening. They are intended as aesthetic as well as functional components.

Apartments can be either studio, two, three or four bedroom units. Interior walls can be conventional wood or steel stud walls with gypsum board, honeycombed panels, or panels such as those making up the Vari-flex Building Component System.

Some of the major drawbacks of this system are: the large space requirements for on-site casting of components, the lack of flexibility in bathroom arrangement, and limited choice of internal circulation patterns.

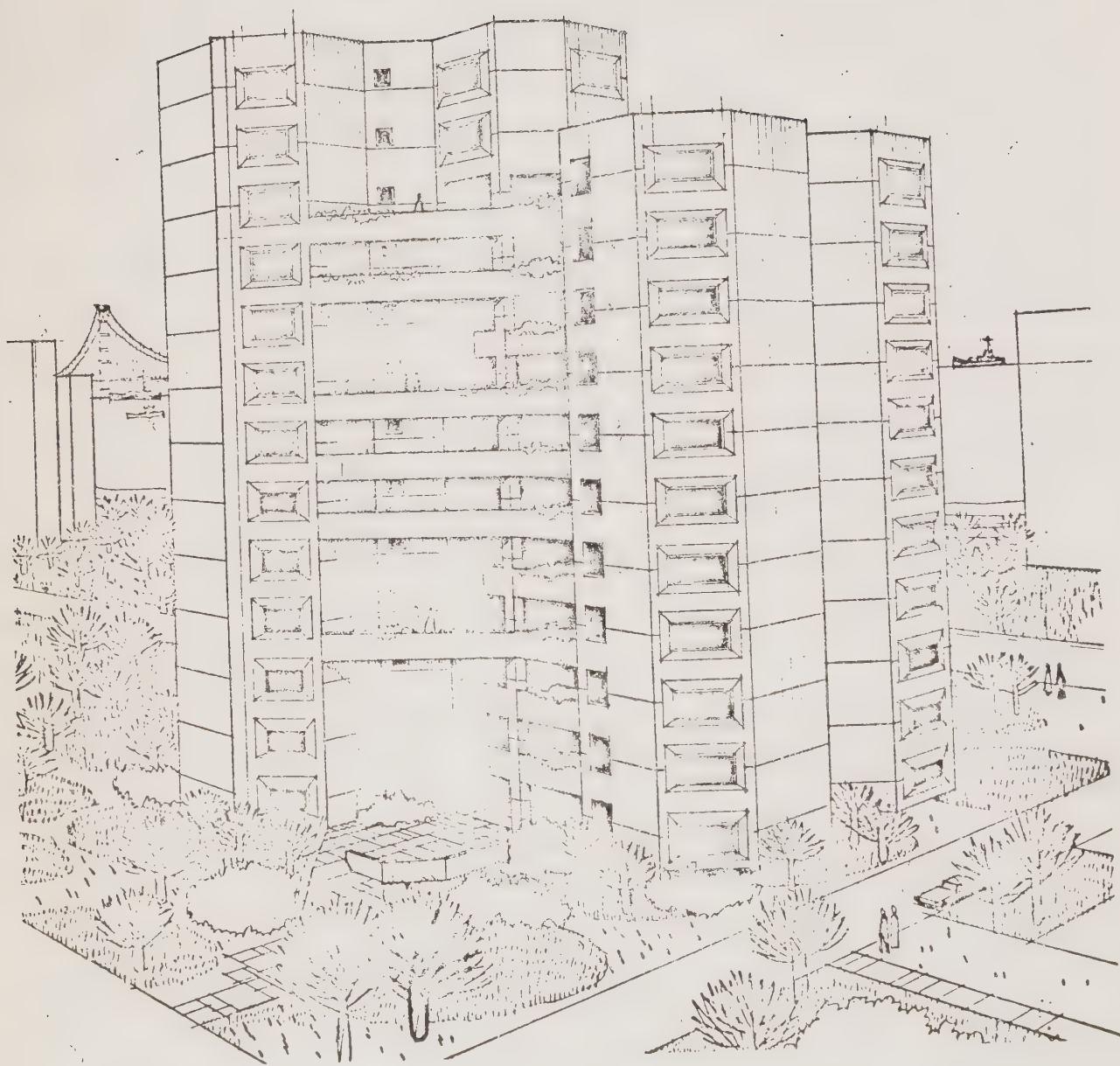
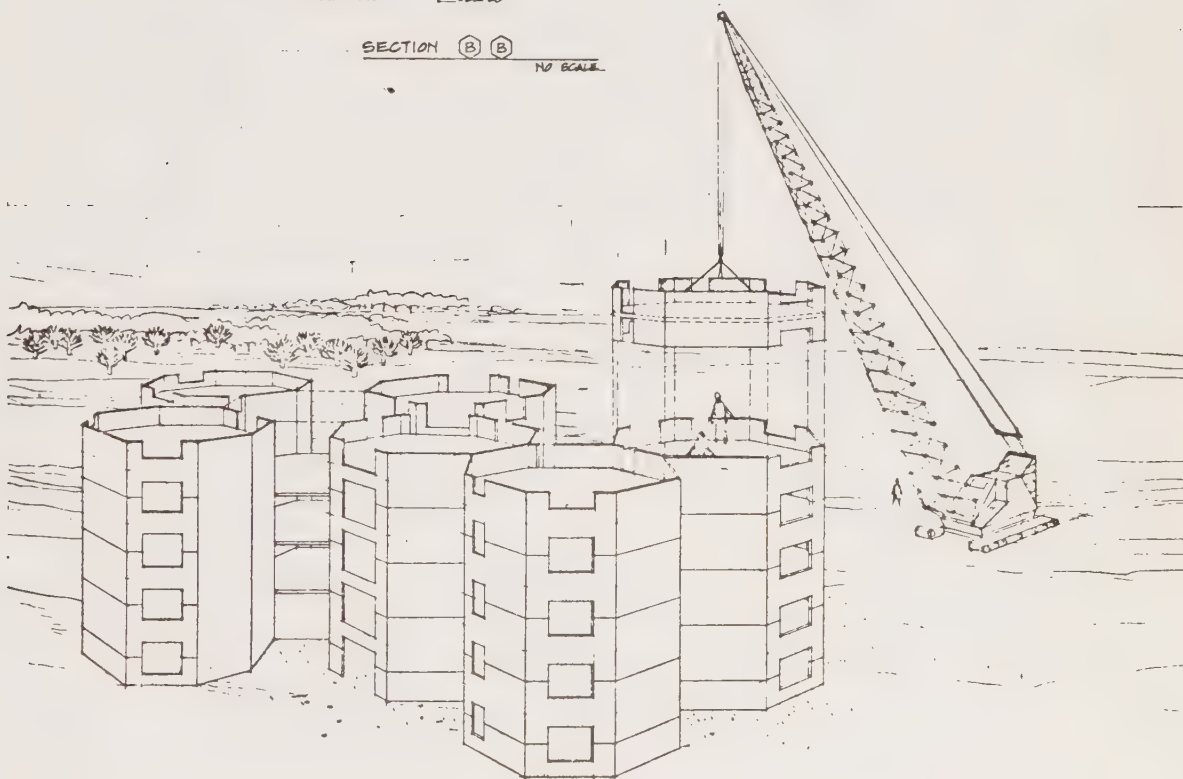


Figure III-38. VARIABLE OCTAGONAL HIGHRISE



III-349

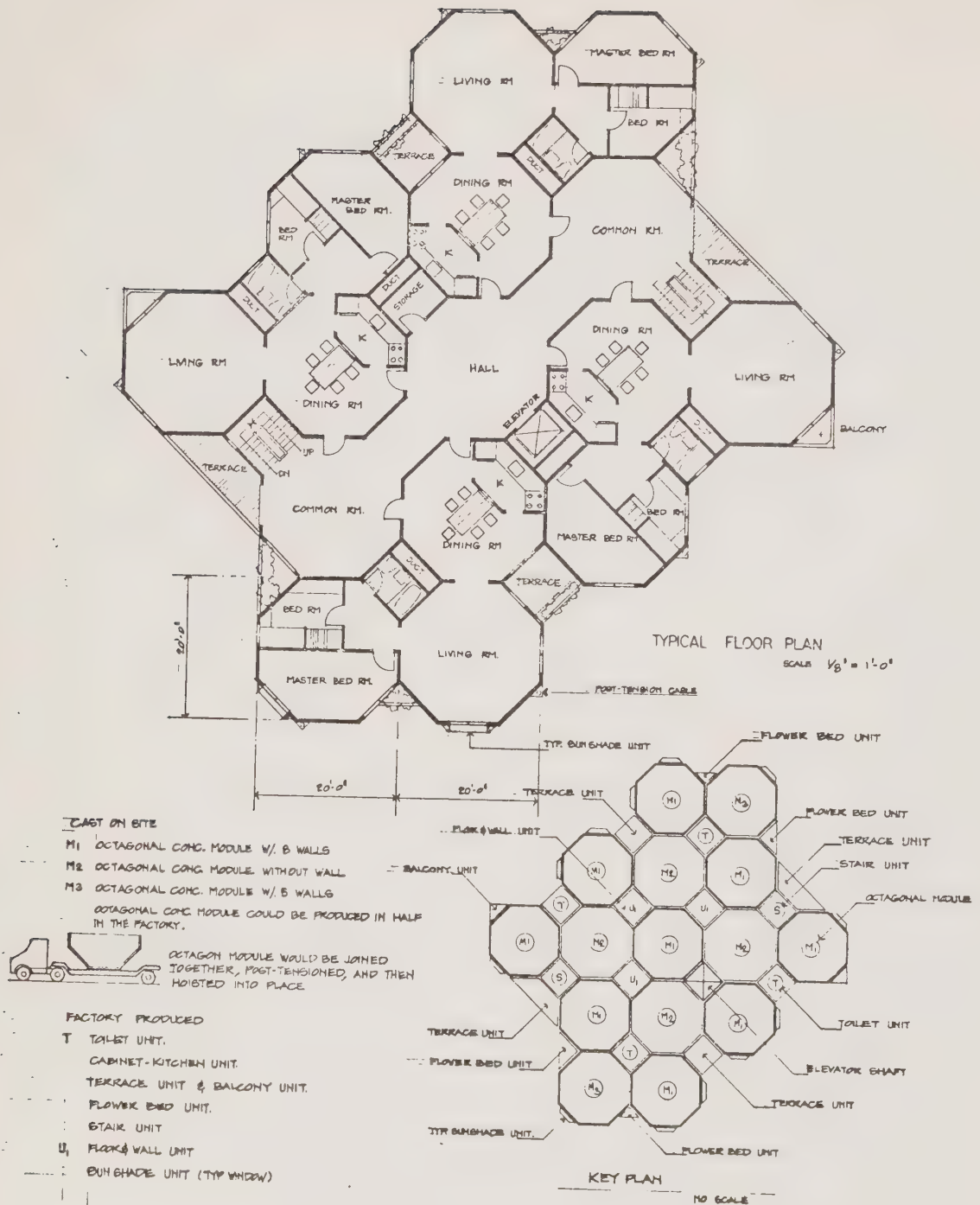


Figure III-40. TYPICAL FLOOR PLAN

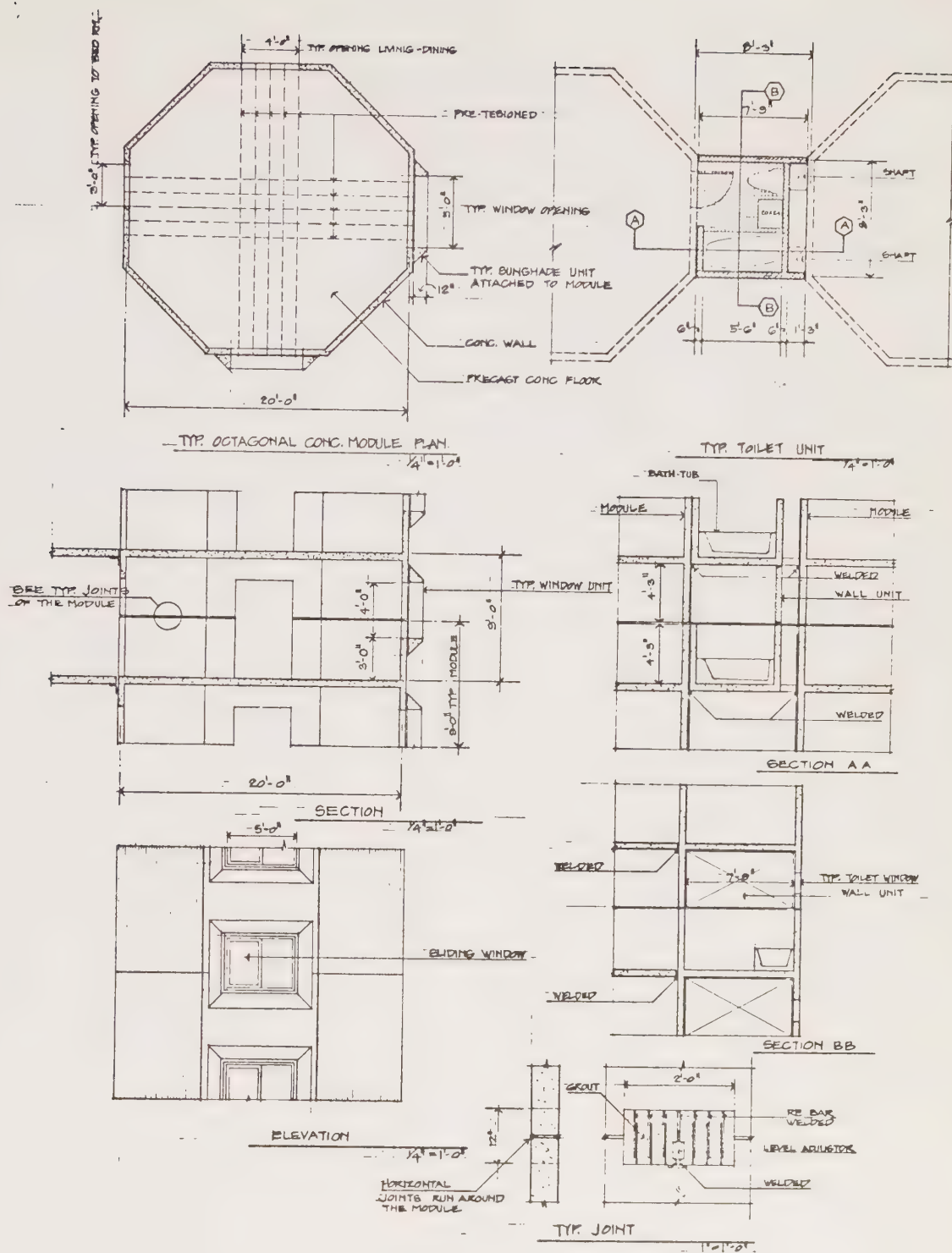


Figure III-41. TYPICAL OCTAGONAL MODULE PLANS

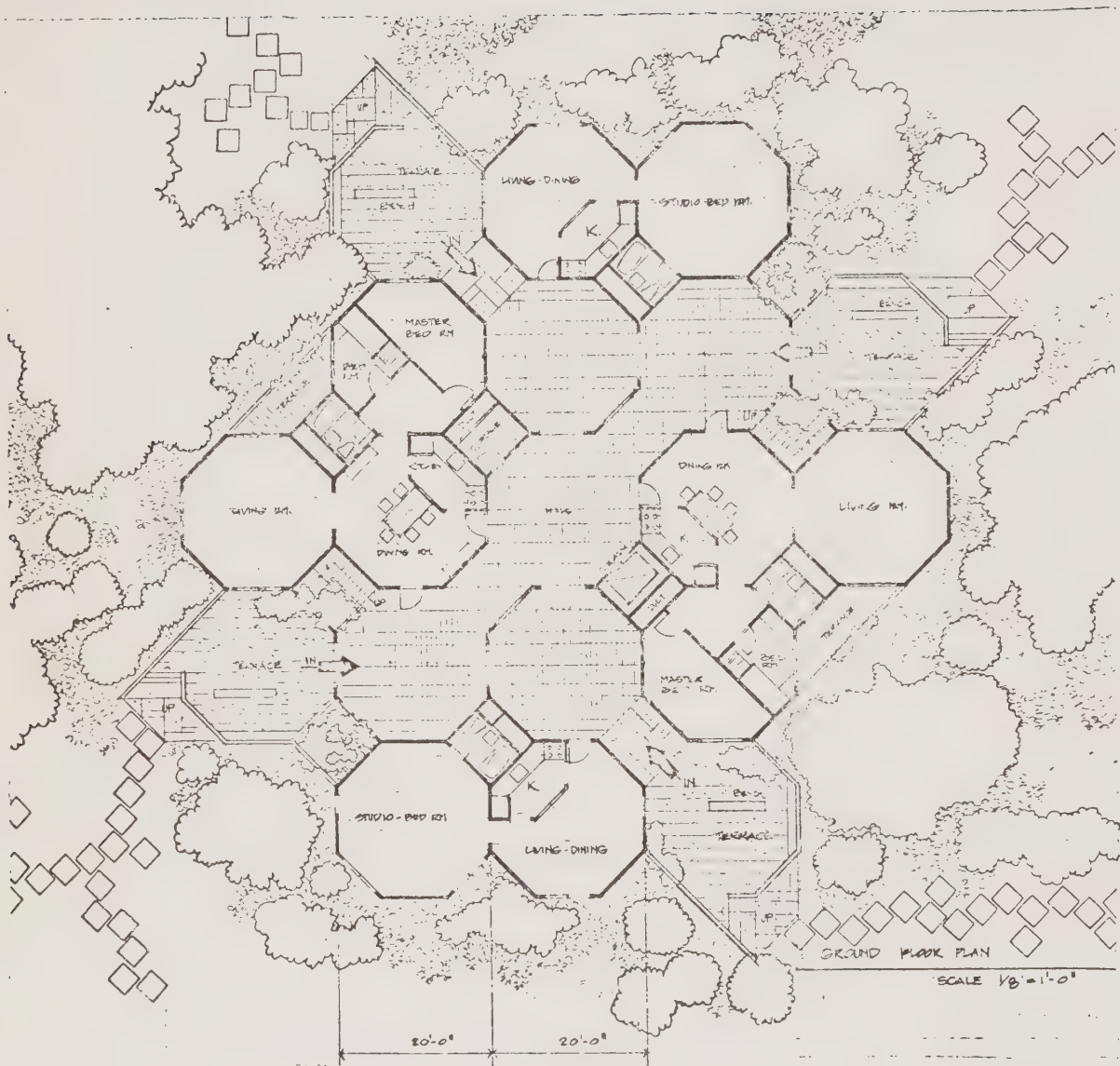


Figure III-42. GROUND FLOOR PLAN

Construction costs for this system have been estimated in the range of \$14/square foot.

### A Factory Suggestion

The goal of this factory will be that of fabricating low cost housing for the future planning of San Francisco. We must consider that the question of fabricating houses at the lowest possible price cannot allow the aim of the industry to be one of obtaining personal profits; for this reason the organization of ownership will be the first concern and will be studied in detail.

We all recognize the urgency of lowering the cost of construction in order to give comfortable, decent, dignified housing to low income families. This is the principal justification for carrying out this idea which has not been sufficiently studied and developed, to the present date, of mass producing houses, working out new methods of production in factories installed specifically for this purpose.

It is well known by all that modern technology discovers and devises new materials daily and perfects those which already exist.

This factory will be concerned with developing the uses of some already existing materials in the construction of houses, something which has not been applied previously in a uniform and systematic way.

A new type of light concrete panel will be used as a kind of structural floor of concrete.

Let us define briefly the products which will be fabricated, as follows:

1. Houses of one, two or three stories constructed with three different modules, one triangular with great applicability in situations of uneven terrain.
2. Houses of one, two or three stories constructed with rectangular modules which will reduce construction time.

3. Elements and structural parts which will lessen the cost of high rise constructions destined to be commercial offices and housing.

The location which we will select must be well situated with regard to communication facilities as much for the accessibility of materials as for the distribution of our final product.

After some investigation a place situated in the southern part of San Francisco was selected which meets these standards of accessibility as well as being idle at the present time.

- a. Plant Location Study

1. Results of the Market Research - The housing shortage cuts across all categories and all price ranges, the main cause is expensive money; with permanent mortgages up to 10% and 11% and apartment construction as high as 14%, both builders and buyers have been pushed right to the wall. The fact that 1970's output will be close to 1.5 million units despite this pressure shows just how desperate the housing demand has become.

The most critical factor is that 30 million units will need to be built in the U.S. during this decade and 30 thousand will need to be built in the San Francisco area.

More than 13 million new families will be formed in this country and an estimated 3 million if them will also need low-income housing.

It is critical because without these low-income units the housing industry and all it's allied industries will continue to lose ground in the fight to share the growth of the gross national product. In 1960 that share was 4.5%, in 1969 it was only 2.9%.

After that we can say that this factory can be located anywhere in the U.S., but in this special case our problem is the city of San Francisco, for this reason we select this location for our factory.

2. Cost and Pricing Studies-Cost Estimate-On-Site Concrete Panel Production and Equipment - The following cost estimates were developed from the best available information and are based on production of panels for 200 town-houses at one site.

<u>Materials</u> (panel 6 inches thick)	<u>Cost per square ft.</u>
Ready mix @ \$22/yd.	\$0.41
Lightweight aggregate (100 #cf concrete)	
7.5 bags	
5000 p.s.i. 28 days	
Prestressing cable @ \$0.65 per LF	0.10
7/16 inch S.R.S. @ 8 in. o.c. (average)	
Reinforcing wire mesh	0.04
6 x 6 in. WWF @ \$0.14 per SF	
1 layer for floor and roof panels	
(2 layers for wall panels)	<u>0.55</u>

#### Fabrication Labor

Based on "plant" productivity estimated for a 500 ft. long casting bed, 8 ft. wide panels; 8 man crew produces 3,400 sf of panel in 8 hrs.

64 man hours @ \$5.85 per hr. average	<u>0.11</u>	0.66
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#### Labor and Materials

##### Overhead\*

(Regular overhead plus cost of reusable forms and equipment, set up costs, extra costs concrete bed, supervision of panel production at 25% of labor and materials)

0.17

<u>Total Fabrication Costs</u>	\$0.83/SF
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\* It is believed that the overhead allowance is adequate since

it provides approximately \$115,000 for 200 dwellings with 3,400 sq. ft. of panels per dwelling produced and erected at the rate of one house per day over a period of approximately ten months.

<u>Placement</u>	<u>Cost per square ft.</u>	
(assuming one crew of 5 men can, with experience, place 3,400 SF of panels per day. This equals 85 SF of panel placement per man hour compared to about 70 SF of panel per man hour, <u>best time</u> )		
40 man hours @ \$6/hour	<u>0.07</u>	
<u>Placement overhead and supervision*</u>	<u>0.04</u>	
<u>Crane including 2-man crew \$200/day</u>	<u>0.06</u>	0.17
<u>Grouting, caulking and prefinish treatment</u>		
(includes, caulking and prefinish surface treatment, allowance for grouting, patching, light sand-blasting of exterior surface to remove "scale" and spackling of small air void and slight surface irregularities on inside surface of panels - labor and materials)	<u>0.10</u>	0.27
Total placement cost		\$1.10/SF

#### Estimated total cost, panels in place

##### Cost estimate on site casting bed

1. Reinforced concrete casting bed\*  
12-x 500 ft. x 8 in. thick = 6,000 sq. ft. concrete and steel in place including end anchor walls 6,000 SF @ \$1.25 \$7,500
2. Jacking heads 2 @ \$600 1,200
3. Edge forms and shear keys  
1000 LF @ \$4.50 4,500
4. Jack and pump (simplex) 1,250

5. Strand vises 60 @ \$5.00	300
6. Steam boiler 100 HP	4,000
7. Steam piping 1200 LF @ \$3.00	3,600
8. Tarps, 6000 SF @ \$ .30	1,800
9. Concrete sawing machine	2,500

Total one 6000 SF bed and equipment \$ 26,650

Total cost of bed and equipment per SF \$4.44/SF

#### Cost of foam panel

Wall panel per 1' x 10'	High	Low
1/4" plastic face hardboard	\$3.75 (.22x8)	3.00
3/8" oxt Hrd	1.50	1.50
poly foam 1 1/2	2.50	2.00
steel load frame	3.50	2.50
labor	1.25	1.00
	<u>\$12.50</u>	<u>\$10.00</u>

Cost \$1.00 - \$1.25 per L.F. of 10' panel

#### Cost of the factory

I. Land 67,781 SF @ \$5.00 SF -----	\$338,905.00
II. Warehouse:	
L and preparation \$67,781.00 @ 0.50 ----	33,890.00
Structure: columns and ceiling 67,781.00 SF @ \$5.00-	338,905.00
Floor cement: 67,781.00 SF @ \$2.00-	135,562.00
Offices: 1200 SF @ 15.00----	18,000.00
Electricity:	
Cable and wire in conduit 3 and 4	
10,000 LFT @ \$ .36-----	\$3,600
Spotlights 150W 320 @ 17.00----	5,440
Labor Cost-----	8,000
	<u>\$17,040.00</u>

Plumbing ----- \$30,000.00

Subtotal 1,012,302.00

Incidental costs 101,230.00

\$1,113,532.00

#### Equipment

Traveling crane 2 -----\$80,000.00

Compressors 1, 900 CFM ----- 25,000.00

Graders, self powered ----- 17,500.00

Rollers ----- 9,000.00

Panel assembly table ----- 10,000.00

Hand tools ----- 90,000.00

Office Equipment ----- 10,000.00

\$161,500.00

Total cost-----\$1,275,032.00

#### Cost of Housing

I. a. Single family detached dwelling made up of 4,400' volumetric modules side to side

b. Assume plant in S.F. area in production 1972

c. Using today's dollars

d. Unit: Dwelling of 1600 SF

4 br.

2 bath

carport

living

dining

kitchen

storage

improved site

In sum: a typical California ranch-house type dwelling

e. Not included in cost: land financing

f. Costs are conservative --- i.e.,: high

II. Cost breakdown -- based on 250 houses/yr. = 1,000 modules

Dwelling costs

Labor -----	\$ 2,750.00
Material -----	8,000.00
Plant overhead -----	450.00
Subtotal-----	11,200.00

On-site costs

Foundation -----	800.00
Utility hoop-up -----	250.00
Sidewalk (150 SF) -----	75.00
Set-up erection -----	300.00
Driveway -----	100.00
Subtotal -----	1,525.00

Transportation

20 miles -----	140.00
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<u>Overhead and contingency -----</u>	135.00
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Profit

Total -----	14,000.00
per sq. ft. -----	8.75

III. Conventional cost prediction:

\$12.00 SF x 1600 sq. ft. -----	19,000.00
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IV. Trends: After several years production:

Factory costs down to \$8.00/sq. ft.

Conventional costs: up 10%/yr. during 1970's

1980 cost: \$11,200.00 plant

\$29,000.00 conventional

## V. Other considerations

1. Add a room case
2. Almost no maintenance
3. Case of Maintenance
4. Instant rehabilitation aspect
5. Resale

### Factory Produced Building Details - Low Rise

Purpose: To provide a low-rise building versatile in service, flexible in floor plan, and manufacturable in a scale large enough to meet the growing demands for durable and repairable housing.

The proposed system utilizes a pier foundation system which eliminates extensive on-site excavation, handwork, and in many cases retaining walls, thus making more land in San Francisco available for building.

The building system, capable of three story construction, may assume thousands of configurations according to personal taste and purpose. The floor panels are rectangles 8' x 8' and 8' x 16', an isosceles triangle 8' x 16' x 16' and a bay window section 8' x 16'. These floor sections can be combined in any configuration.

The building is constructed using load bearing floor and exterior wall panels designed to minimize on-site assembly time. These panels may be made of different types of materials. The most conventional being concrete panels. (its cost being suggested by "the factory suggestion - concrete panels." The other suggestion makes use of materials of 10-20 years from now.

Interior partitions are non-load bearing and may be moved by the tenant. The kitchen, bathroom and stairwell obviously would have to be more permanently located. Interior panels would incorporate paper honeycomb in a wood frame for its light weight durability and sound deadning qualities.

The major areas of savings are in on-site construction time, foundation costs, labor costs, and financing charges. Material costs will not be reduced noticeably by the presented techniques. In fact, when using some of the more advanced materials, the cost may be higher but this offset by the higher durability added to the structure because of their use. Figure III-43 shows construction techniques of the system.

### Highrise Community

This design was developed to study the feasibility of producing high rise community buildings and the possibility of producing community interaction in the high rise situation. Through the varied lengths of the modules, their pin-wheel arrangement, and the placing of the service towers with respect to each other; naturally lighted open spaces would lace the structure throughout. Some would be developed as green areas of unspecified use and others would be developed for specified recreational activities. At the center of the common areas would rise the verticle circulation tower forcing people living on a particular level to use the common area for access to their apartment.

A request was made by a member of the Physical Community Design group for a building that could expand vertically as a need arose for more housing units. This need could be from population growth or from dislocation of families as redevelopment or rehabilitation occurs. This building could easily expand vertically by extending the service towers, adding a new steel frame and moving in more living units by crane or helicopter. Construction is a combination of prefabricated components and a structural steel frame supported by concrete towers. There are four such towers arranged in a grid pattern with the primary members of the structural steel frame spanning between them at every fourth floor. Secondary members complete the steel grid by spanning between primary members.

Figure III-43. CONSTRUCTION TECHNIQUES  
OF FACTORY PRODUCED LOW-RISE

The concrete towers are actually mechanical service cores and at each floor contain four bathrooms and up to four kitchen service hook-ups, depending on the floor plan. The living units are prefabricated volumetric modules utilizing the Vari-flex Building Component System. Each floor of living units is four modules 14' wide, 10' high varying in length. Individual apartment units would be made up of all or part of one or two modules. They arrive on site completely enclosed from the weather including interior partitions and furnishings.

Interior partitions are relocatable and new ones may be added at any time allowing an apartment occupant more flexibility than is now available.

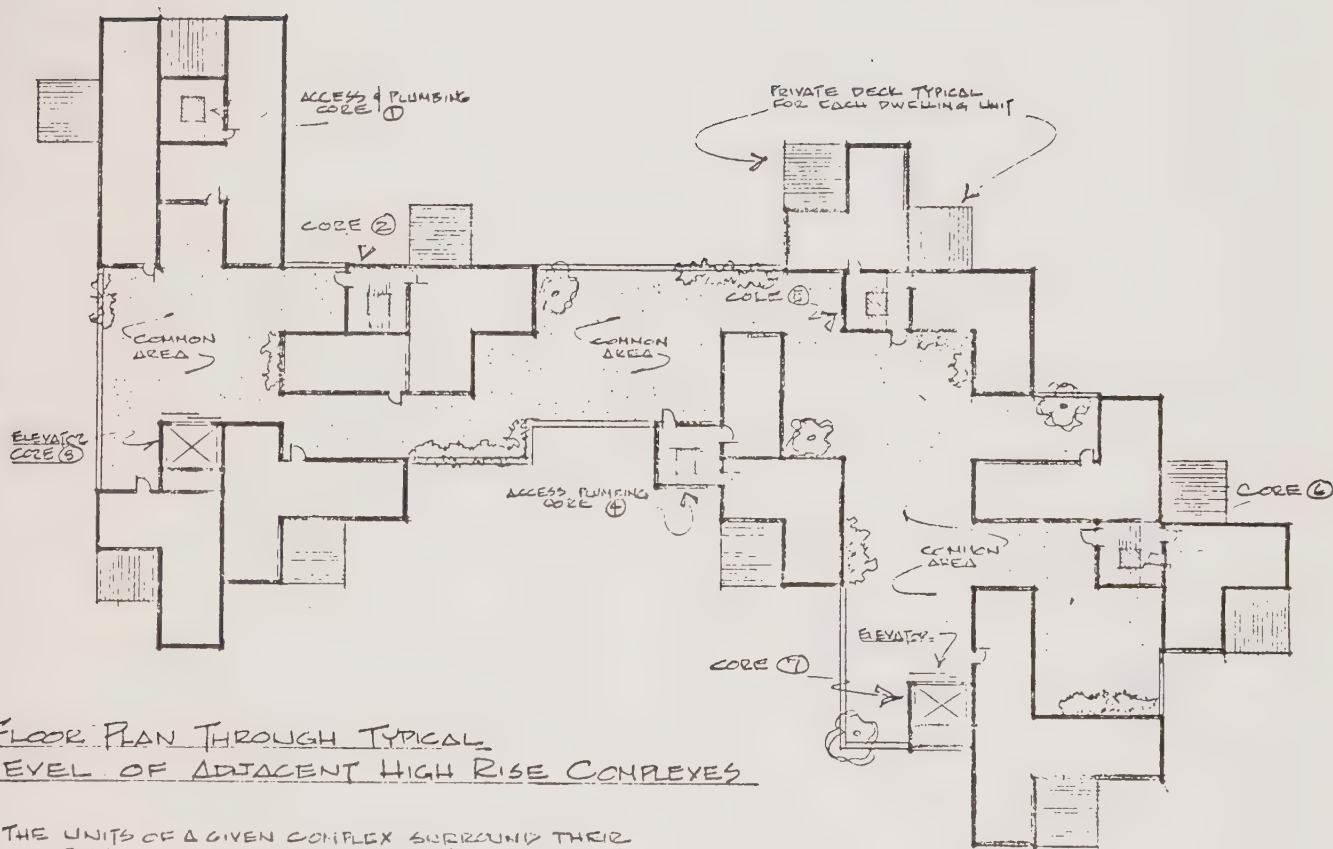
Each module is structurally designed, using Vari-flex building components, to support three similar modules. After each set of four levels is assembled, a new structural frame is built above it, and four more levels enplaced.

All bathrooms are located within the concrete towers and consist of specially designed wall panels (see bathroom subsystems). Each will contain a lavatory with storage beneath, a water closet, and a tub shower unit. Total dimensions are 6' by 10' horizontally.

Kitchens will be less rigidly developed although most counters, cabinets, and built-in appliances will be prefabricated off-site. Each kitchen will have only one wet wall adjacent to the service core.

#### The Prismatic Building System

This system utilizes dimensionally-identical prisms as a structural form to be joined together in various configurations. The prism has a structural frame consisting of a steel "C" channel welded at corner intersections. At the connection of two prisms, the "C" channels are bolted together forming a structural "I" beam. The prism frames are then covered with a new type panel consisting of a 3/8"



FLOOR PLAN THROUGH TYPICAL  
LEVEL OF ADJACENT HIGH RISE COMPLEXES

THE UNITS OF A GIVEN COMPLEX SURROUND THEIR OWN COMMON CORE, WHICH IS USED AS BOTH ACCESS AND PLUMBING SHALE. ADJACENT COMPLEXES ARE THEN JOINED AT COMMON LEVELS TO CREATE A COMMUNITY DECK.

Figure III-44. FLOOR PLAN THROUGH TYPICAL LEVEL OF  
ADJACENT HIGHRISE COMPLEXES

paper honeycomb core sandwiched between two sheets of aluminum sheathing or glass reinforced plastics or combinations of both. The connections between individual panels and between the panels and steel frame are made with a preimpregnated GRP/(resin-rich) epoxy such as Narmco 500. Thermoformed acrylic window panels would be tinted with color and vacuum-aluminum coated to reduce solar heat and insure privacy. Natural ventilation comes through jalousie type openings on exterior panels, the traditional swinging door has been replaced by removable sliding partitions.

Within the structural prism is a variable floor system of modular floor panels, these floor panels rest on a series of open floor joists tied together for lateral support. The individual floor panels can be coated with a vinyl or carpet material. In addition the panels would have surface mounted electrical outlets, telephone jacks, and forced air vents. The underside of the floor system supports acoustical ceiling panels and recessed light fixtures.

Mechanical units for quality air control are housed in storage units at the intersection of exterior panels and the floor. Remaining space in the unit is for household storage.

Plumbing activities for kitchen and bathrooms have been confined to areas adjacent to vertical facets where necessary space can be enclosed around vertical structural members.

For production, the prismatic units would be fabricated at the factory, complete with bathroom and kitchen fixtures and flooring, and then shipped to the site and bolted together to form the completed living units.

### An Evaluation of the System

The prismatic building system is an alternative solution to contrast with the ever increasing market of prefabricated boxes. It looks to the future in an attempt to apply technology to the changing life styles of people, it is not the first system to feature a triangular form, but it does appear

to be unique in its method of utilization of that form and its full potentialities.

The prism has been criticized for its inefficient use of space at the intersection of sloping walls and floor. This condition has been minimized by vertically truncating the form to create an exterior area for decks. The sloping window wall does occur, however, where it can enhance the function of that area. For instance, in a dining area people are seated and the sloping window wall adds an intimate scale to the area. For a bedroom area, the primary function is sleeping. Therefore a sloping window wall would provide a lower scale to encourage a relaxed horizontal feeling, but then, for a living area a sloping window wall may be desirable as a relief from traditional vertical enclosures, also affording a generous view of San Francisco and the Bay. It is important to note that a sloping window ceases to be a "pure enclosure"; instead, it creates a "buffer" space to stimulate a feeling of openness and a personal relationship to the surrounding view.

On a more practical level, the prism or triangle involves a basic structural principal implying strength and stability. This inherent strength allows the prisms to be combined in numerous ways to adapt to the natural hillside terrain with a minimum of grading, thus helping to preserve the beauty of the natural hillsides.

The building system has virtually eliminated the use of wood as a building material. The new sandwich panels previously mentioned possess better qualities for heat and sound insulation and also durability. The use of adhesive bonding for connections eliminates the need for costly and bothersome fasteners.

The system also eliminates doors and windows in the traditional sense. A swinging door is inefficient in that it requires space in which to swing, it also complicates

simple procedures such as moving furniture. Indeed, a removable sliding door, such as that used by the traditional Japanese for hundreds of years, proves to be more sensible for purposes of security, visual separation, and versatility. For windows people have traditionally accepted the idea of an encased-glass hole-in-the-wall. This practice is costly and inconsistent with most structural systems (and sometimes incompatible with the visual appearance). The prismatic building system utilizes a continuous surface of panels with visual openings occurring where transparent panels are placed instead of opaque panels.

The floor system of small modular floor panels is at first costly, but for the near future it may prove to be a most essential element. Even now one can observe the increasing mess of electrical wires from appliances, from antenna wiring for television and radio, telephone wiring, and a multitude of other home electronic equipment. The near future will see even more complicated telephone equipment, station-to-station television viewing, and even home computer terminals. The removable floor panels allow for easy installation of such equipment and when necessary they make it easy to change locations to adapt to new living situations.

### Economic Theory

The Prismatic Building System is not an inexpensive system. It is an efficient system which seeks to create an environment for new opportunities in living. The presumption then, that the new opportunities will be chosen is therefore also an assumption that the choice will be made to pay the new costs, but costs is an essential factor that has led to the genesis of factory-produced housing. Therefore, it is important that the system cut costs other than the initial cost of construction, because of the quality of materials and necessity for diagonal panels, the prismatic building



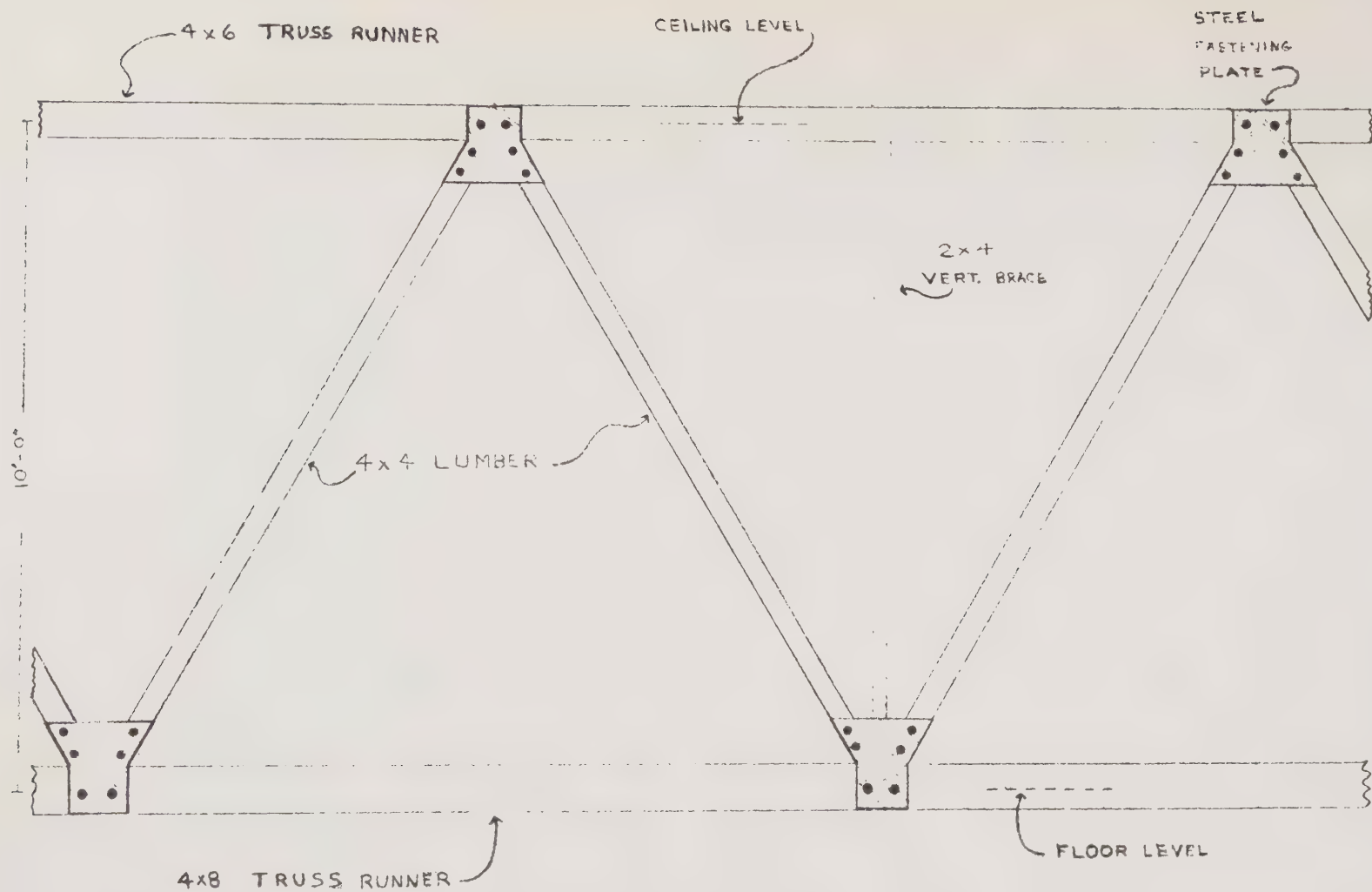
Figure III-45. THE PRISMATIC BUILDING SYSTEM

system may have a principle cost of 20% - 30% more than conventional factory produced housing. The savings in cost would arise after a period of time due to a great reduction in maintenance and repairs accountable to the high quality of building materials. A direct savings of utility costs would result from the better insulating qualities of the sandwich panels. An additional economic feature is the ease with which new prism units can be added on to existing ones, and the option to move existing units to new sites.

### Truss-Wall System

Utilizing the strength and economy of bridge-like trusses for its structural elements, the Truss-Wall System is designed for single family homes or low-rise multi-family dwellings. This system is similar in outline to some modular homes being produced today, but has certain practical and aesthetic advantages over the typical box-frame module. The advantages stem from the truss itself which is not only economical to construct, but also rather striking in appearance. 4" x 4" beams form the legs of a series of 30° - 60° triangles which are supported by upper and lower runners of 4" x 6" and 4" x 8". (See Fig. III- 46.). Each triangle spans six ft., and the entire truss-walls could be precut for assembly on the site in 36, 42, 48, 52 and longer ft. lengths. Each wall is placed 12' apart, and flooring and roofing systems could range from traditional framing techniques to stressed-skin panels. Two 48 ft. modules of this sort could provide 1200 sq. ft. of floor space, and the ceiling height would be 10 ft. (See floor plans).

Due to the structural properties of such a truss system, a great deal of strength is produced utilizing a minimum of materials and the modules need only be supported on a few points. Conventional forms, simple piers (as shown in the figures) posts, or piles would all be compatible to this system for foundation purposes, thus economical construction



TRUSS-WALL (EW)  
SC: 1/2" = 1'-0"

Figure III-46. TRUSS-WALL SYSTEM

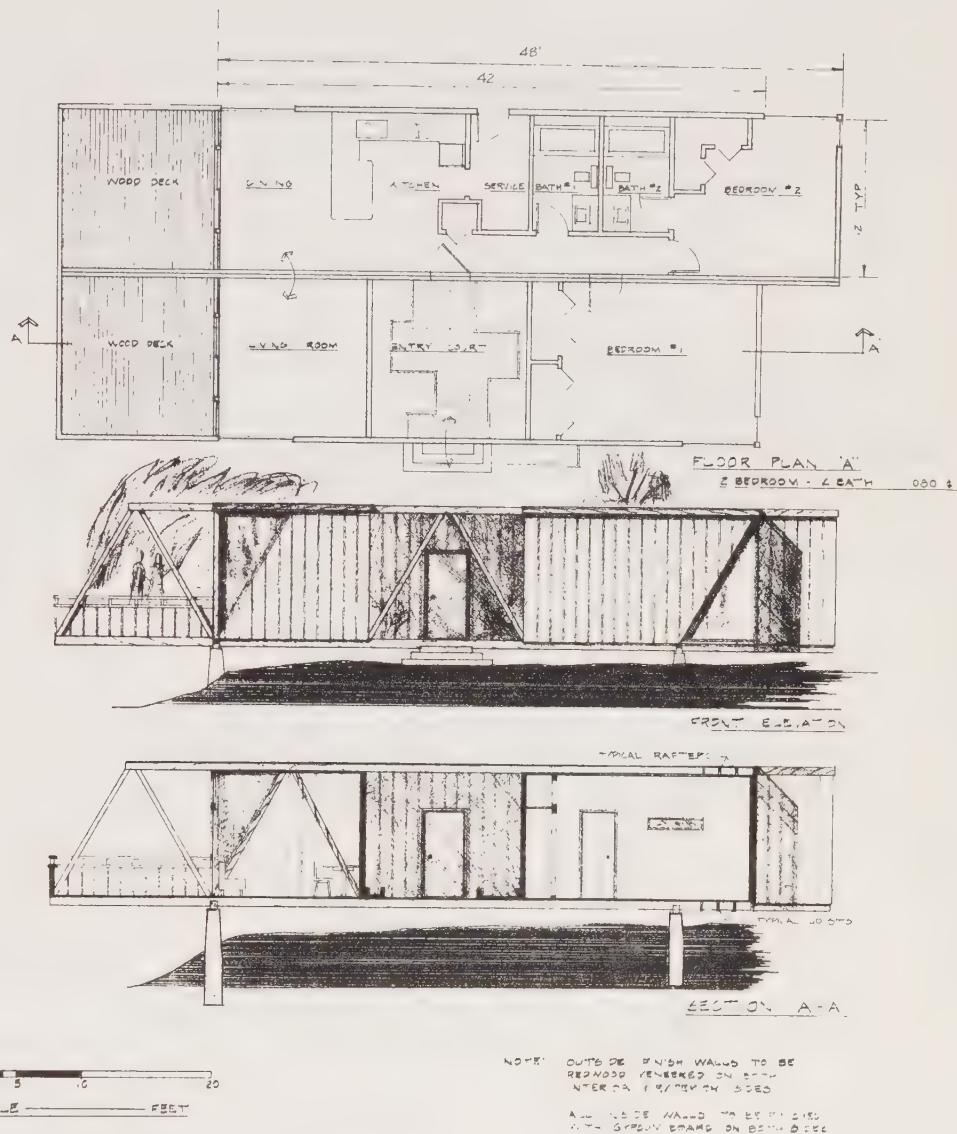


Figure III-47. TRUSS-WALL FLOOR PLAN "A"

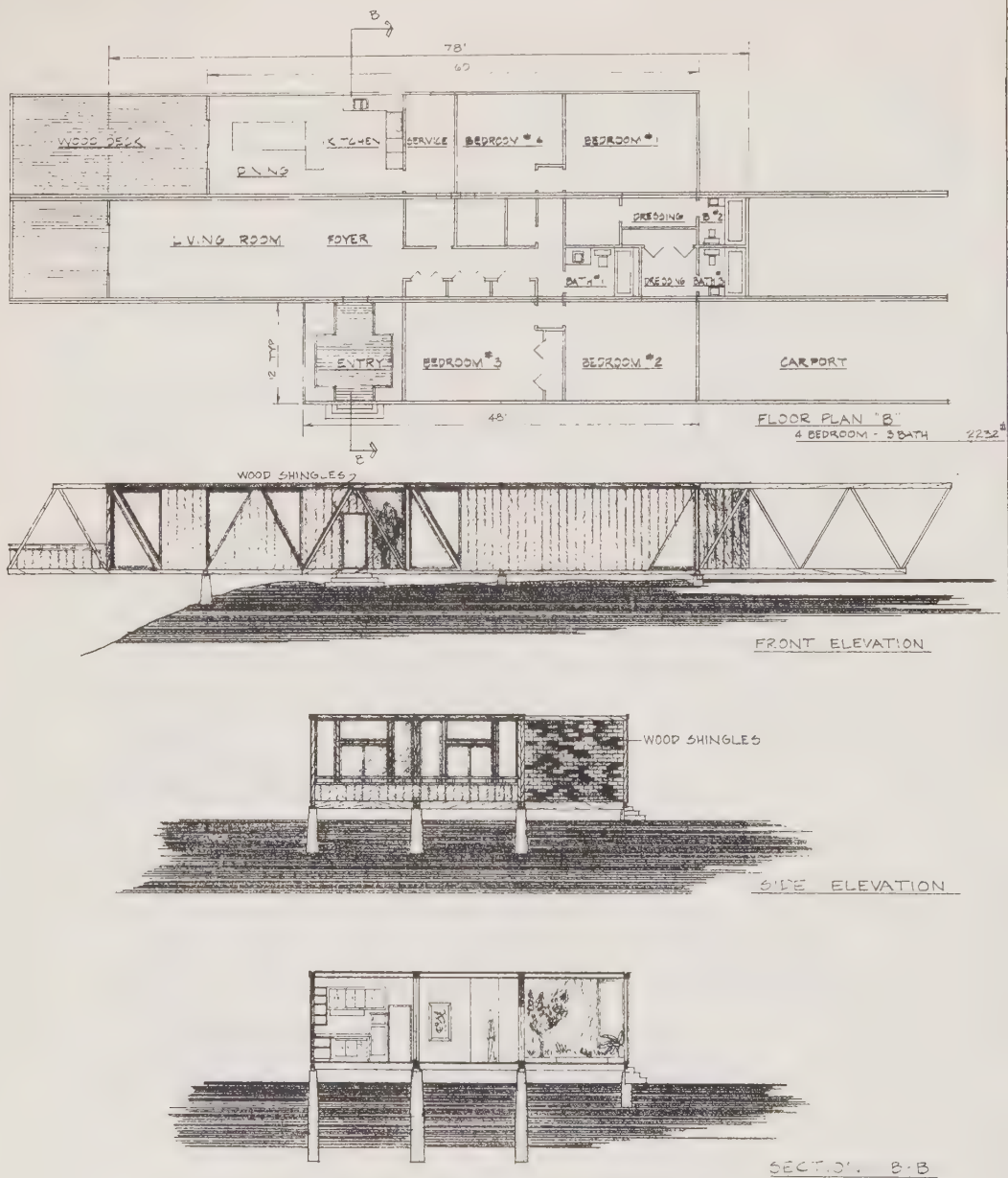


Figure III-48. TRUSS-WALL FLOOR PLAN "B"

in the hills of San Francisco could be accomplished with a minimum of site disturbance. Striking cantilevered designs might also be used extensively with this system in rough terrain.

The simple design of each truss-wall would lead to economical factory precutting of the truss elements, and pre-drilled members could be easily shipped to the site and assembled with a minimum of labor, tools, and skill.

The factory itself would not be elaborate, as the only equipment necessary would be jigs for precutting the truss members, and a drill press for predrilling to fit the standard fastening plates. All the other necessary parts such as floor and roof materials, wiring, plumbing, etc. could be ordered at bulk costs from their respective manufacturers according to predetermined specifications. Thus standardization of parts for a "typical" unit would lead to ease of assembly at the site. The factory would be more of a clearing house for materials than an elaborate manufacturing concern.

Traditional methods of flooring, roofing, and interior partitions seem to be the most economical at present, but as new methods and materials become feasible they could easily be incorporated into the system. Even with these traditional-methods the Truss-Wall design is quite economical, as a typical unit could be built today for \$8.40 per sq. ft.

The aesthetic qualities of this system stem from the basic structural element - the truss. With a ceiling height of 10', the triangular openings could be readily employed as interior doors, since at a height of 6 ft. each triangle is more than 4 ft. wide. Exciting triangular exterior entrances would also be possible, while their basic harmony with the system would be readily apparent. Triangular windows would be pleasing features and roof-types could be varied to suit differences in personal taste. Cantilevered decks and carport roofs would also add character to the design, and

as with all of the above-mentioned features, they are functional parts of the system, not just facades tacked on to please the eye. Quality materials, ease of erection, coupled with owner involvement and a pleasing form all strive toward a pride of ownership which is absent so frequently in today's housing systems.

#### Cost Breakdown for Wood-Truss Section

Typical 1,150 sq. ft. house-2 bedrooms, 2 baths, complete with appliances, plumbing, wiring and fixtures. 2 modules 48' x 12'. Cost/sq. ft. = \$8.40

#### Foundation

8 concrete piers @ \$12.00 ea. (in place) = \$96.00  
8 Simpson frames @ \$ 2.00 ea. = 16.00

#### Truss-Walls

4 pcs. 4" x 8" lumber 48' long @ 35¢/lin. ft. = \$67.20  
4 pcs. 4" x 6" lumber 48' long @ 27¢/lin. ft. = 51.84  
64 pcs. 4" x 4" lumber 12' long @ 18¢/lin. ft. = 138.24  
Labor - 12 man-hours @ \$5.00/hr. = 60.00

#### Interior Walls (non-bearing)

110 lin. ft. stud walls (16" on center) @ \$10.00/ft. =  
1,100.00 (figured at 1 man-hour/ft.).

#### Interior Paneling

24-4' x 10' sheets 1/2" redwood interior paneling-\$192.00  
Labor - 2 hrs. @ \$5.00/hr. -\$10.00

#### Exterior Paneling

24-4' x 10' 5/8" exterior redwood panels - \$240.00

#### Flooring

1152 sq. ft. 5/8" plywood = 2,072 lb. @ 5¢/lb. = \$103.60  
72 pcs. 2" x 8" joists = 2,764 lb. @ 5¢/lb. = 138.20  
144 joist hangers @ 10¢ ea 14.40  
Labor - 14 hrs. @ \$5.00 70.00  
Adhesive 5.00

### Roofing

1,152 sq. ft. built up 4 ply asphalt w/gravel and metal flashing - \$250.00

### Finish Carpentry

Carpentry and mill-work - \$900.00

Windows 1,000.00

Doors 600.00

Stairs 85.00

Plumbing and Hot Water - complete - \$1,300.00

Wiring - complete - \$800.00

Appliances - \$560.00

Heating - \$288.00

### Miscellaneous

Iron and steel - \$ 50.00

Paint - 100.00

Finish Hardware - 50.00

Weather and Caulk - 17.00

The total cost of project \$9,724.00

\$8.40/sq. ft.

Detailed drawings of the Truss-Wall System Follow:

## Bathroom Subsystem

A bathroom subsystem encompassing the design of new fixtures and their integration with storage spaces into a system of plastic panels was developed after research indicated the designs of existing fixtures ignore important human engineering criteria and many contemporary bathrooms provide incomplete facilities. Also, since manufacturers are beginning to fabricate plastic bathroom components without taking advantage of the required retooling to improve the design of their products, it seemed valuable to develop new designs in order to demonstrate possible improvements, finally, the traditional materials and construction techniques used in the building of bathrooms are becoming increasingly expensive, and a system of plastic panels offered the possibility of financial savings through reduced materials and installation costs.

The panelized system developed is a compromise between a group of unintegrated components, as represented by what has been traditionally available, and a complete bathroom module. Unrelated components barely hint at the potential of a system while a module would be too rigid, allowing at best only a few floor plans and having only limited applications in the rehabilitation of housing because of problems with installation.

At this time the panels would be fabricated out of the glass reinforced plastics already being employed by bathroom fixture manufacturers. Production techniques would be somewhat more sophisticated, the result of more sophisticated designs, but essentially the same as those already being used to produce plastic bathtubs, shower stalls and lavatories. Where additional stiffness is required, at the panels' edges and in the portions forming walls, precut, rigid, plastic foam sheets would be bonded to the glass reinforced plastic shell.

The panels would be held in place and connected to each

other be means of a frame consisting of aluminum extrusions. The screws connecting a panel to the frame would allow the panel to be removed for replacement or access to the plumbing behind it by the use of only a screwdriver. The connections between the base cabinets and the wall panels would consist of extruded aluminum clips clamping the plastic surfaces together and a plastic cement between the surfaces.

The system consists of four specialized panels. The design criteria for the fixtures incorporated into them and the requirements for storage space were derived from the bathroom: criteria for design, the findings of exhaustive research conducted by the Center for Housing and Environmental Studies at Cornell University. The individual panels are best described through the drawings included and therefore will not be dealt with in the text except for the following charts.

Types of bathroom storage space as defined by the Center for Housing and Environmental Studies, Cornell University:

Type	Contents
Enclosed Storage (Limited Access)	Prescription medicines Contraceptive devices Patent medicines and drugs Sick room supplies Toxic and corrosive cleaning agents
Enclosed Storage (Open Access)	Linens (towels, sheets, pillow cases, etc.) General supplies (soap, tissues, etc.) Cleaning equipment and supplies Children's equipment (rubber ducks, potty seat, etc.) Daily use items (water glass, shaving equipment, comb, etc.)

Type	Contents		
Active open storage and work spaces	Daily use items when actually in use		
Contents:			
Facility	Bathroom A	Bathroom B	Bathroom C
Water closet/urinal	X	X	X
Lavoratory	X	X	X
Bathtub/Shower	X	X	X
Lavatory Counter (36" high)	X	X	X
Extended Counter (26" high)	X	X	O
Full length mirror	X	X	O
Lavatory mirror	X	X	X
Enclosed storage (Limited access)	X	X	O
Enclosed storage (Free access)	X	X	X
Towel Bars (2 lin. ft. per person)	X	X	X
Drying cabinet (For hand laundry)	X	X	X

X - Included

O - Omitted

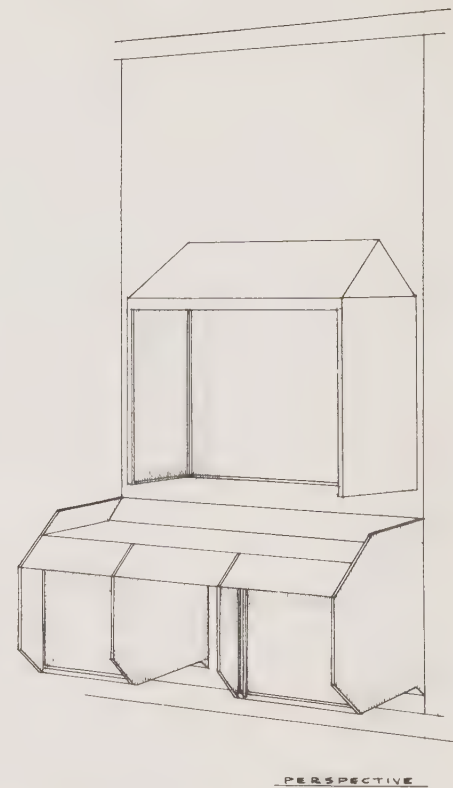
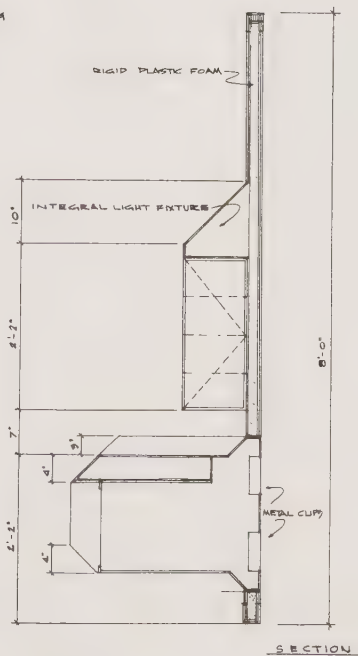
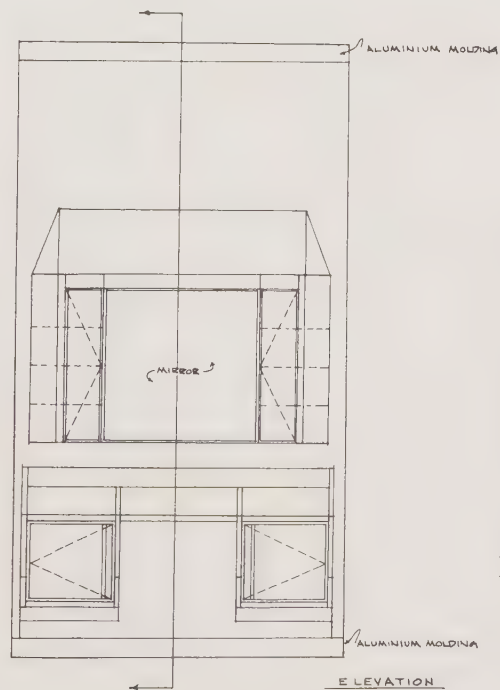
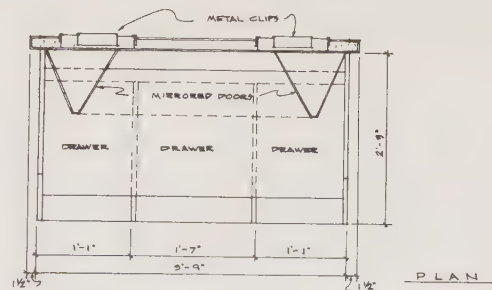
The systems' panels as defined by the facilities inte-  
grated into them:

Panel Title	Facilities
Water closet/urinal	Water closet Urinal
Lavatory	Lavatory Lavatory counter (36" high) Lavatory mirror Enclosed storage (free access)
Dressing table	Extended counter (26" high) Enclosed storage (free access) Enclosed storage (limited access)
Tub/shower	Bath tub Shower stall Drying cabinet

Bathroom facilities as a function of the number of bedrooms per dwelling unit:

No. of Bedrooms	Bathroom Facilities
1	Bathroom A
2	Bathrooms B and C
3	Bathrooms B and C
4	Bathrooms B and C
5	Bathroom B and two bathroom C's

Detailed figures of bathroom facilities follow:



DRESSING TABLE PANEL  
SCALE 1"=1'-0" J. TATO

Figure III-49. BATHROOM SUBSYSTEM - DRESSING TABLE PANEL

Figure III-50. BATHROOM SUBSYSTEM - TUB/SOWER PANEL

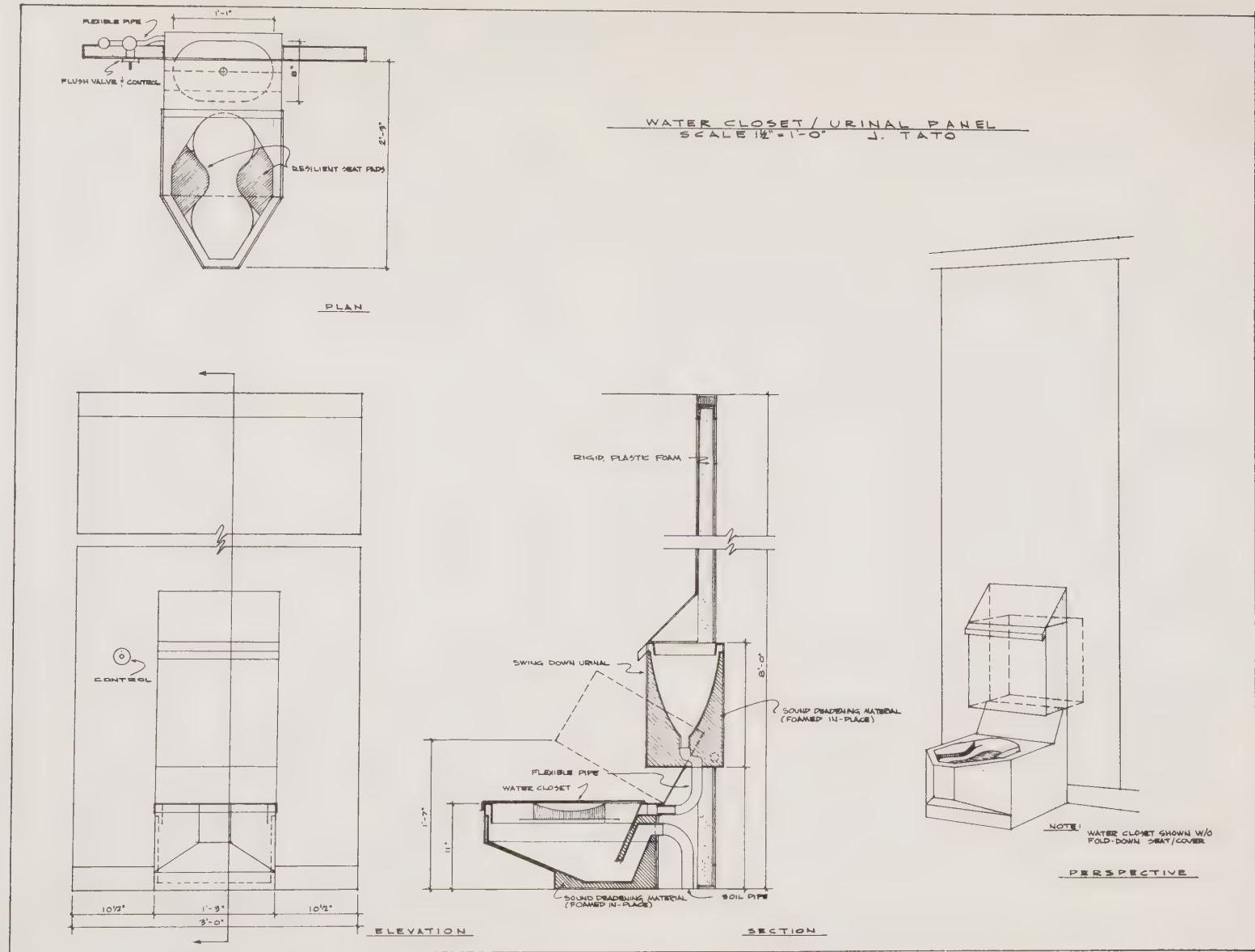


Figure III-51. BATHROOM SUBSYSTEM - WATER CLOSET/URINAL PANEL

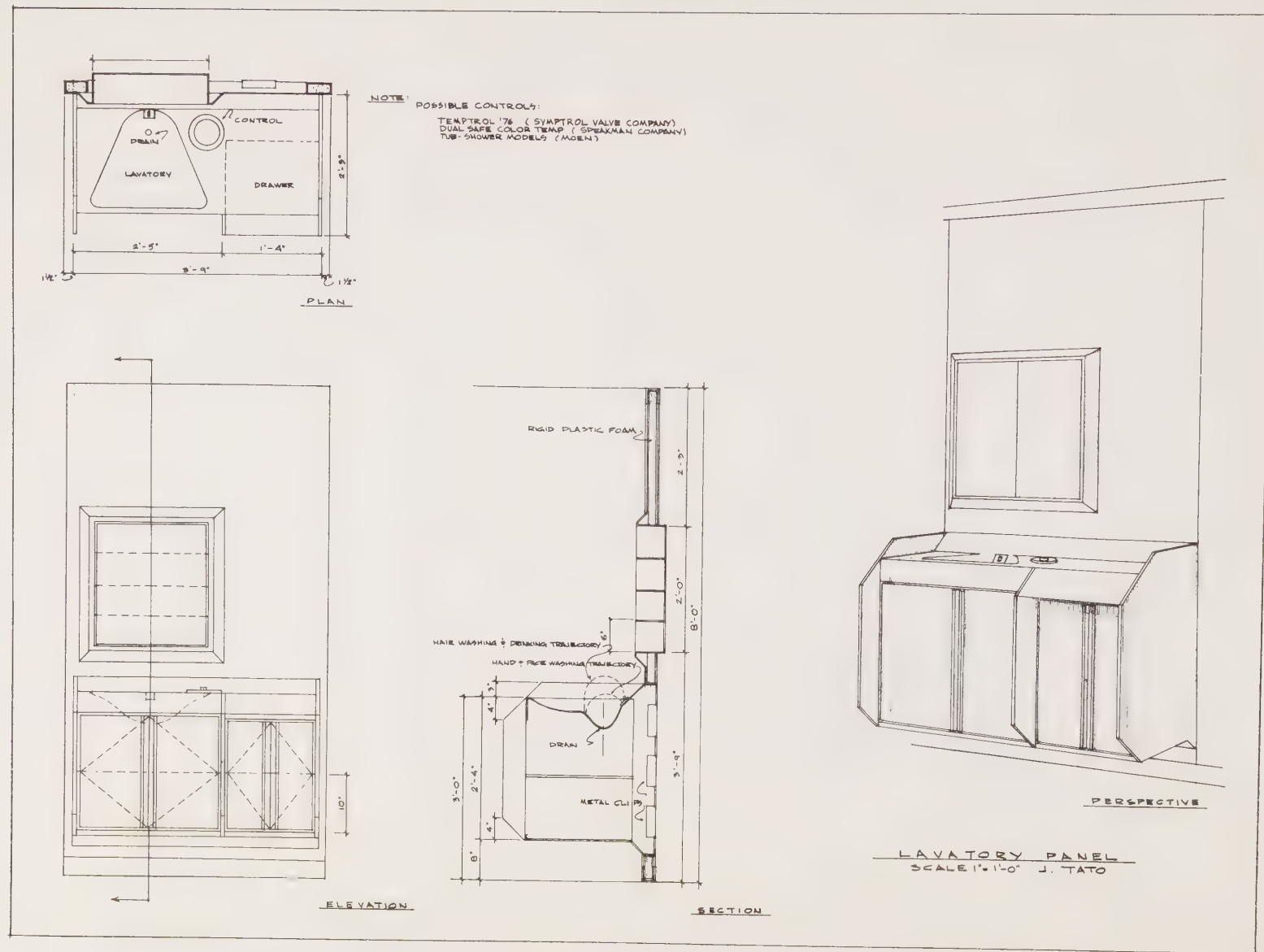


Figure III-52. BATHROOM SUBSYSTEM - LAVATORY PANEL

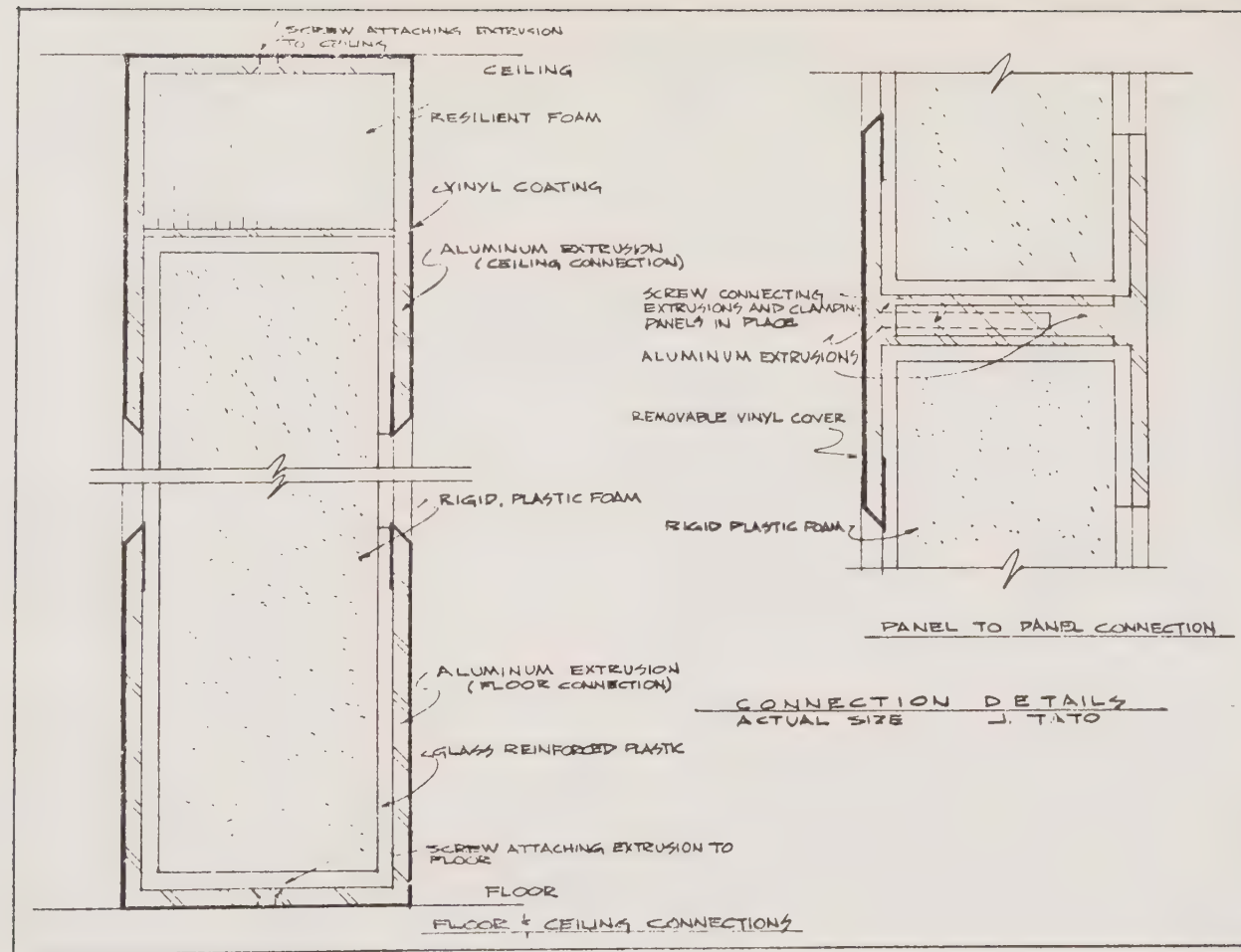


Figure III-52. BATHROOM SUBSYSTEM  
 CONNECTION DETAILS

# Appendix III-K

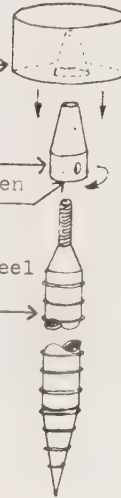
## PREFABRICATED BUILDING MATERIALS

### Foundation

Cap - concrete cylinder fits over taper allowing for misalignment of pier

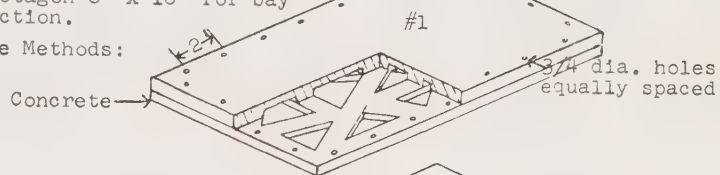
Jack - steel screw mechanism for leveling foundation  
Spot weld edge to pier when level

Pier - concrete filled steel attachable sections for necessary depth



Floor Panels - Available in four different shapes, rectangular 8' x 16', sq. 8' x 8', isosceles triangle 8' x 16' x 16', and 1/2 octagon 8' x 16' for bay window section.

3 Possible Methods:

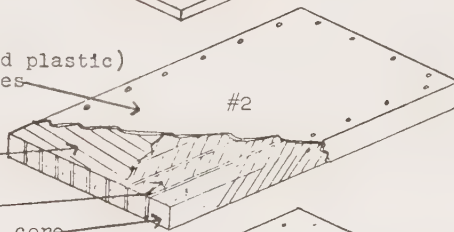


GRP (glass reinforced plastic) cover sheet both sides

GRP overwind

core wrapped at 45° with GRP

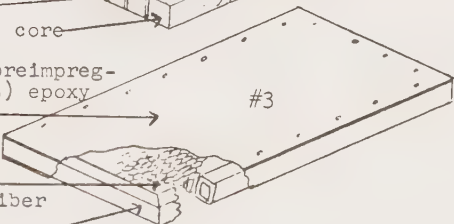
PVC core



Skin: Narmco "500" preimpregnated plastic (glass) epoxy plastic

paper honeycomb 3/4" cell size resinated paper

Edge member: glass fiber reinforced plastic (polyester extruded)



Exterior Wall Panels: available in 8' x 8' sections with a variety of windows, doors, etc.

Steel "T" molding with 3/4" dia. studs equally spaced at 2'. Studs are resistance welded to "T".

concrete

#1

Steel "T" molding with 3/4" dia. holes equally spaced a 2'

extruded aluminum frame and stiffeners

polyurethane foam filler

#2

GRP (glass reinforced plastic) exterior skin. Chipboard interior skin.

Edge member: glass-fiber reinforced plastic (polyester extruded)

Paper Honeycomb: 1/4" cell size, resinated paper 0.005" thick, weight 45 ozs. per ft<sup>3</sup>, compressive strength 270 psi.  
shear longitudinal 120 psi.  
shear transverse 85 psi.

#3

Longitudinal shear direction is vertical

Skins: Narmco "500" preimpregnated (glass) epoxy plastic. Advantages - low cure (250°F), no pretreatment of skins or core, adhesive elimination

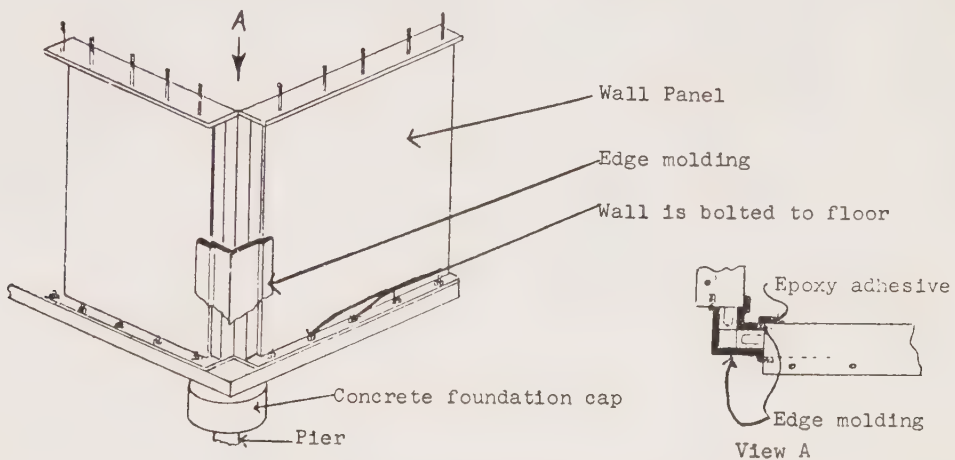
Edge molding: extruded aluminum 8' sections. Available for interior & exterior corners & butt joints

Interior post: 8' steel with flang mounted top & bottom. Studs resistance welded on top, holes on bottom

Note: Floor panel configuration #1 may be used only with wall panel configuration #1.

### On-Site Building Technique

1. Drive Piers
2. Install Concrete Cap
3. Level all piers using jack, secure
4. Lay floor panels & stairway section
5. Install walls & bolt to floor
6. Attach edge molding
7. Install interior posts at floor panel corners
8. Repeat steps #4 thru #7 VP to 3 floors
9. Install roof panels & roof facade and bolt down

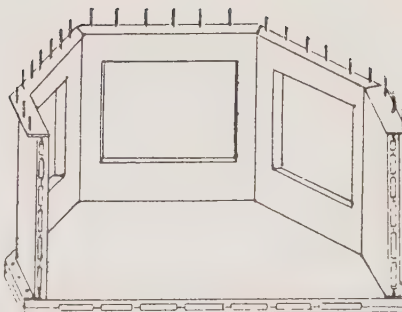


Sample Building: Practically any configuration up to 3 floors can be built with this motif. Use may be in residences, multi-family apartments, business-residence combinations or business units.



# Bay Window Section:

Shown here in concrete.  
However all three exterior  
wall panel configurations ap-  
ply. Section is 8' x 16'



Interior wall: non-load bear-  
ing, available in 4' x 8'  
panels blank or with door insert



rubber  
skid

Mechanism for securing interior  
wall in place. Turning allen  
screw expands panel which squeezes  
against ceiling.

Wood frame

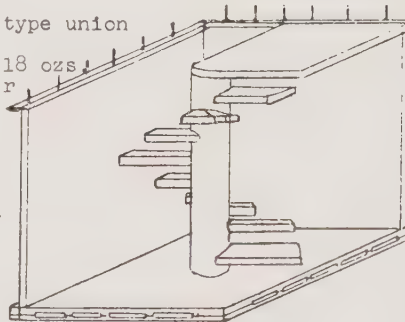
View A

Rubber boot to protect floor and carpet

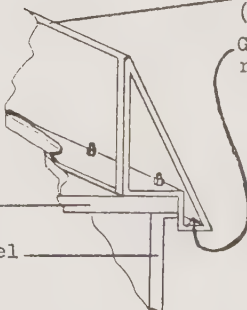
Paper Honeycomb 3/4" cell size of type union  
bag & Camp Co, Douglas "Aircomb".  
or Hexcel Products. Paper weight 18 ozs  
per ft.3, C mesh, unresinated paper  
0.009" thick.

Gypsum Board Skin: bond with 3M  
EC-1357 or Armstrong D-288  
Neopreme "contact" adhesives.

Stairs: Standard concrete or steel  
spiral stairs mounted in  
8' x 8' x 8' cube.



Roof: Flat roof panels are  
the same as floor panels  
false facade roof sections  
are fabricated of sheet  
aluminum available in  
straight and bay window  
cone sections.



Straight roof facade section  
(shown mounted-back side)

Gutter is integrated into  
roof. Facade for major run-off.

Roof

Wall Panel



Bay window roof facade

## Appendix III-L

### A. Tram and Mini-bus Design

The problems of travel within the CBD are great at the present. The systems are inadequate, crowded, and inconvenient. They also have the problem, as do almost all public transit systems, that many of them must lie idle during non-peak hours. To solve these problems, we feel it was necessary to design our own system.

The problems in residential areas are much the same as those in the CBD. There should be a system, smaller than the cross-tram lines, which will get the people of a small area to one of these lines. The system must be small enough not to be overpowering in a residential setting.

These two problems are of a very similar nature, and, as such, we have decided to treat them together as design problems. The tram, our proposed solution to downtown's transportation needs, is an open vehicle with side-facing seats and is able to be quickly converted to haul freight at any time. The tram is 24 ft. long, 85 in. wide, and 7 ft. high. It is mounted on a wheelbase and has two longitudinal supporting members running under the two lines of seats. The suspension is a trailing arm type. This suspension is included primarily to save space. It was designed to place the wheels as far outboard as possible for stability, but the edges of the seats limit this. The trailing arm suspension has the advantage of taking up shocks with purely vertical motion, whereas a normal suspension, as one might expect to find on a car, also experiences camber change when hitting a bump. It was therefore decided to use the trailing arm suspension in order to be able to place the wheels in an outboard position. In either case, it is necessary to use a low-profile tire in order to keep the seats and the tram low.

For the residential areas, we are proposing a mini-bus which is closed and also convertible to a freight mode at

any time. It is hoped that the front part of this bus can be interchangeable with the tram. This would cut down repair costs and some capital considerably, as only one type of these parts would have to be kept in stock. The bus is 20 ft. long, 8 ft. wide, and 7 ft. 3 in. high. Its wide doors allow for easy loading of freight, as well as much more comfortable passenger loading. The narrow doors of most buses are, we feel, definitely not desirable.

One point to keep in mind throughout these designs is the very strong character of San Francisco. Though the entire city does not present a unified character, there is definite cultural influence almost everywhere. We do not wish to see this washed out with the sterility of a shiny mechanical being. Instead, we would like to see vehicles that are personal -- vehicles in which a person can feel like he is a part of what is around him, not above it looking down.

The size of the vehicle is one means of attaining this. A low vehicle with few passengers will definitely be less imposing than a Greyhound bus, even though the large bus is more efficient for longer trips. This passenger capacity must obviously have a lower limit though, since there is a point where it is no longer economically feasible to operate the system. This point appears to be somewhere in the 10-20 passenger range, depending on the application. We decided, therefore on 20 passengers in the downtown tram and 15 in the residential bus. The exact numbers came from convenient seating arrangements.

As can be seen in the drawing, (Fig. III-54.) the seating for the tram is side-facing to allow easy access. For the downtown passenger, it would be a considerable inconvenience to have to spend 10 minutes looking for a seat when he is only going 3 blocks. These seats allow the passenger to merely swing in on one of the vertical rails and sit down.

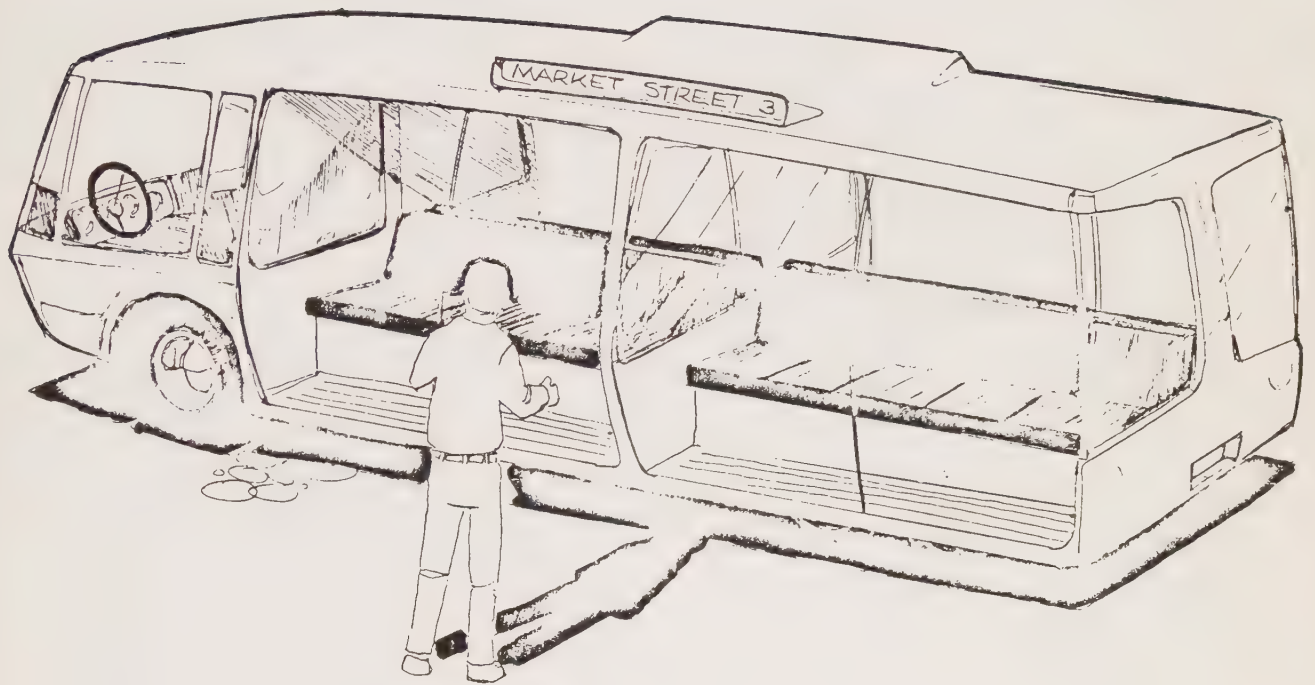


Figure III-54. SIDE-VIEW OF TRAM

With this type of seating, it is estimated that the tram could be filled from empty in 10 seconds or so, which, again is a great advantage on such short hops.

The residential bus, while being closed, is designed so that most passengers are no farther then 2 seats from a door. This provides similar advantages to those listed above. It is also hoped that with the seating arrangement as shown, more of a sense of community can be achieved between those neighbors who travel together to work, or at least part of the way.

Now that the rush hour has ended, what do we do with these vehicles for the rest of the day? Some of them will, of course, still be engaged in normal passenger hauling. The rest can be put to use hauling freight. Using the tram as an example, the conversion from passenger to freight mode can be made in only a few seconds. Merely flip down the seats and fold back the center panel. The mechanism to accomplish this can be seen in the drawing. The seats each have a simple hinge to fold down. When folded down, the freight space extends to the outermost points on the tram, thus allowing nearly 8 ft. of cargo space across and 18 ft. lengthwise in each half. The bulkhead at the center of the tram can also be folded up to accomodate long pieces of freight.

The means of converting to a freight mode on the bus are similar to that employed on the tram. The seats are simply hinged to fold down, forming a flat cargo deck. Access to the cargo deck is through the sliding doors and a hinged tail gate.

Even though San Francisco is in the heart of sunny California, rain does come at times. With the closed bus, this presents no real problem, but in the tram there are problems with both people and freight. To see why, first look at the nature of the vehicle. It is meant to be an open,

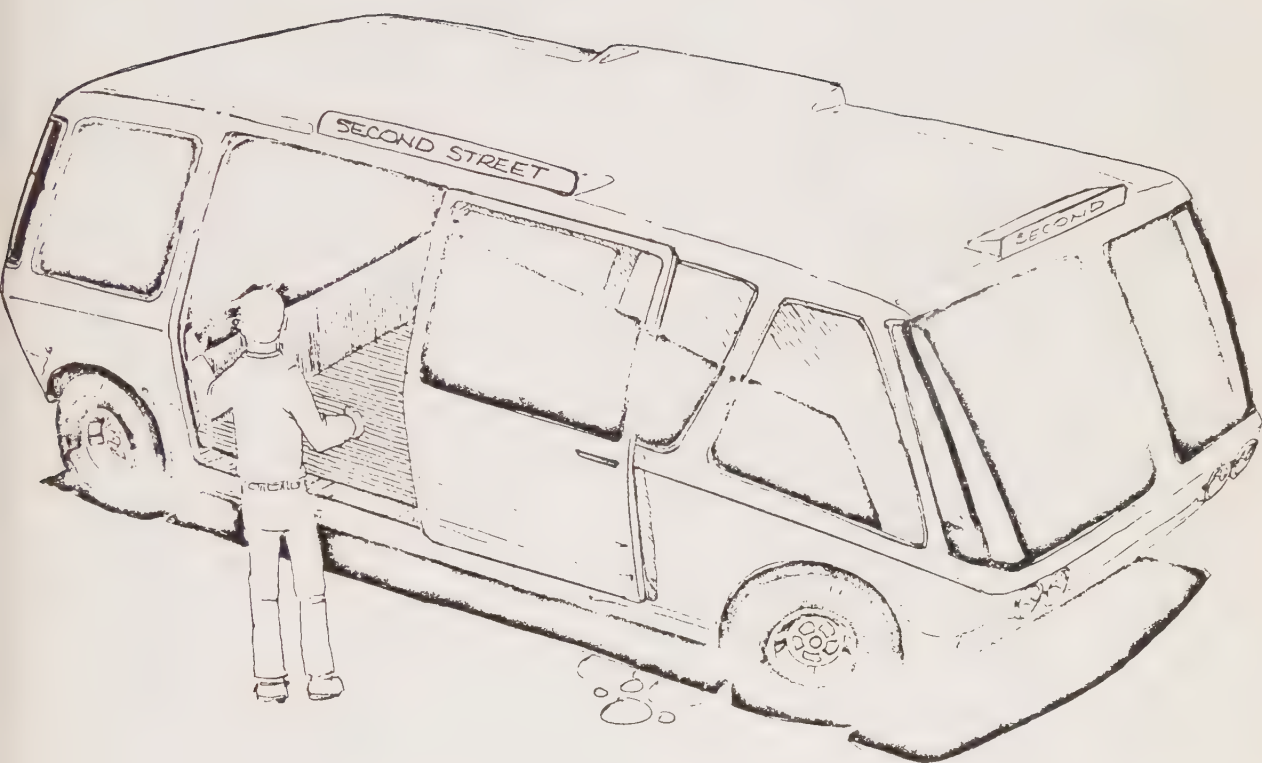


Figure III-55. CONVERTIBLE TRAM TO FREIGHT MODE

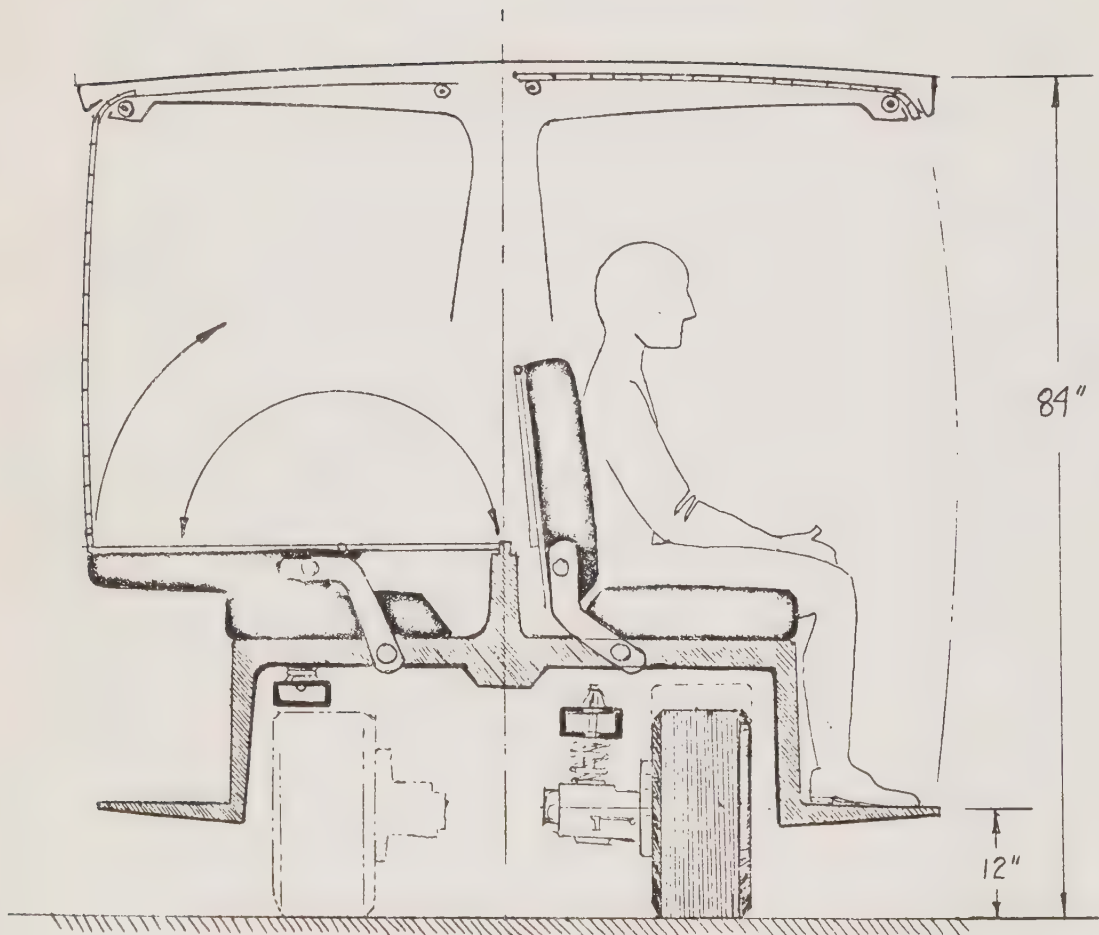


Figure III-56. FOLD-DOWN SEATS

easily-accessible vehicle. People should not be prevented from moving freely into and out of the space it occupies. Partially to this end, all sorts of solid enclosures were eliminated. An air curtain would require too high a velocity over such a narrow space to be effective. Another consideration was a lip coming out from the foot rest. This would get in the way of people as they either entered or left the vehicle. It was therefore decided to design some sort of weather protection which would not inconvenience people. The center bulkhead aids in this. When the tram is moving, the rain will be entering at such an angle that a couple of people behind each bulkhead on each side will be protected from the weather to some extent. When stopped, the rain should not create many problems, as the overhang protects the passengers. As for splashing from passing cars, this problem will gradually decrease as cars are phased out of the CBD. Cable cars presently experience the same problem, a fact which indicates that the situation should be bearable until cars are eliminated. Freight can easily be protected by curtains which roll down from the overhang. They should attach to the folded-down seats.

Now, let us address ourselves to the biggest problem facing public transportation -- crowding. In the tram, we have attempted to solve this by providing comfortable seats and no standing room. Since the tram is shorter than will accomodate the average person standing on the foot rest, there will be difficulty in crowding on. In the bus, the problem can be solved by merely having the driver not stop once his bus is full.

As can be seen in the drawing, the tram is designed with the rear wheels farther inboard than is normal. This began to make us worry a little about cornering, so some stability calculations were carried out. The result was that with 10 200-pounders all sitting on one side of the tram, it can

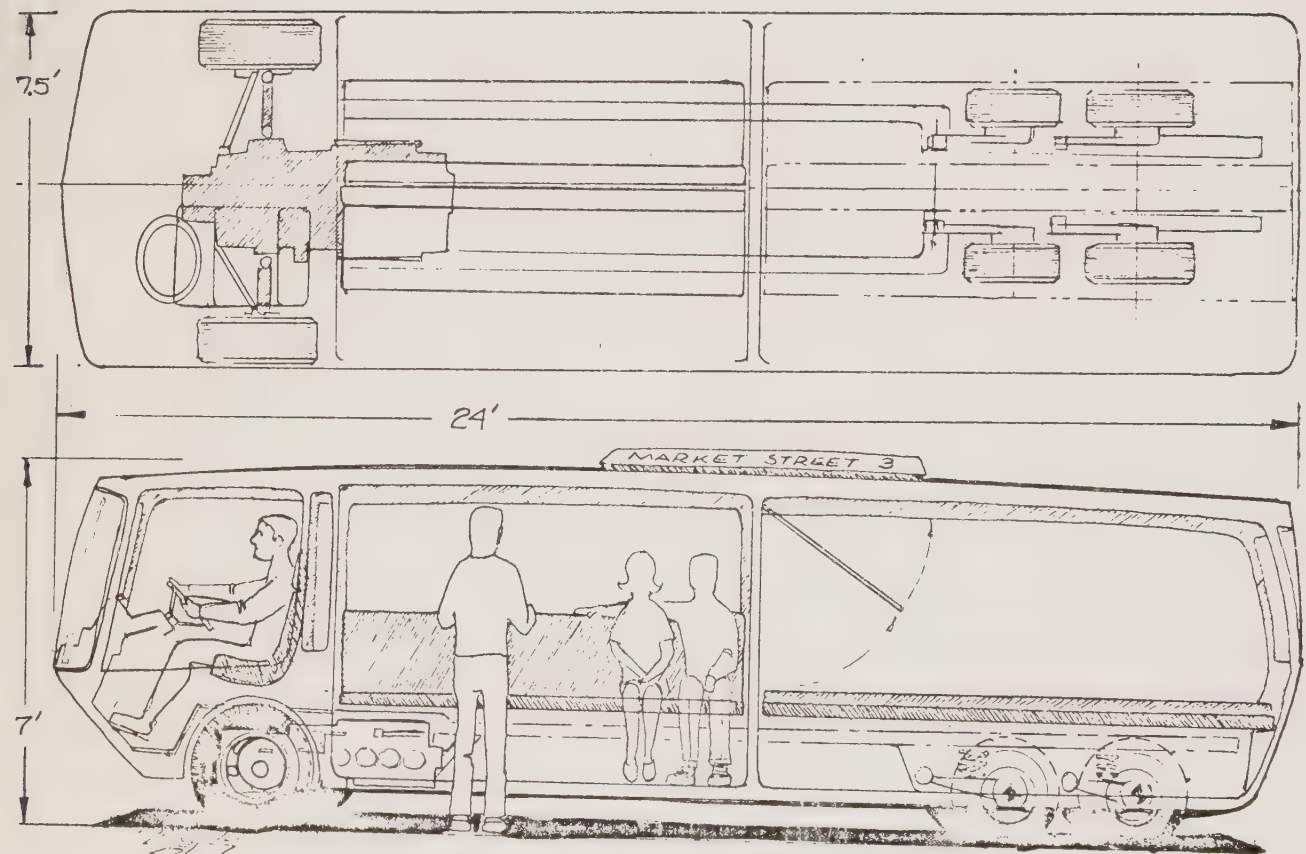


Figure III-57. WHEEL-DESIGN OF TRAM

still turn in the opposite direction at 20 mph around a 20 ft. radius. The bus is even better than this, so the problems in that area are not significant.

The ideal power plant for either the bus or the tram would be the electric motor due to its smooth, pollution free operation. With present technology, however, this is not very practical, as it would have to be recharged a few times a day. The next best unit is a low-emission internal combustion engine. This provides the power needed for constant stop-and-go driving as well as the hills in San Francisco. Both the bus and the tram provide for this type of engine, with space provided in the tram for the addition of batteries, if technology permits an electric motor in the future.

Let us now look briefly at the economics of the system. When first conceived, it was thought that the trams would be free to all passengers. The income from the freight would partially support them. The other support would come from businesses themselves which operate in the business district. Each business could be charged either by the number of employees or by its gross income. With this sort of system, the convenience to passengers would be further increased. It was figured, however, that the trams would cost roughly \$15,000 each and the daily operating costs will be in the \$50-60 range. With these numbers we felt it would be wise to have some kind of fare collection planned just in case it was needed.

The idea is to collect fare from passengers coming from major points in the morning and leaving to them in the evening. With this, the convenience to the shopper or the businessman in a hurry to get to another office remains, while the revenue is greatly increased. In the SP station, for example, the drawing shows a loading platform raised to the level of the step of the tram. It is hoped that people will do all of their scrambling for position in line at the

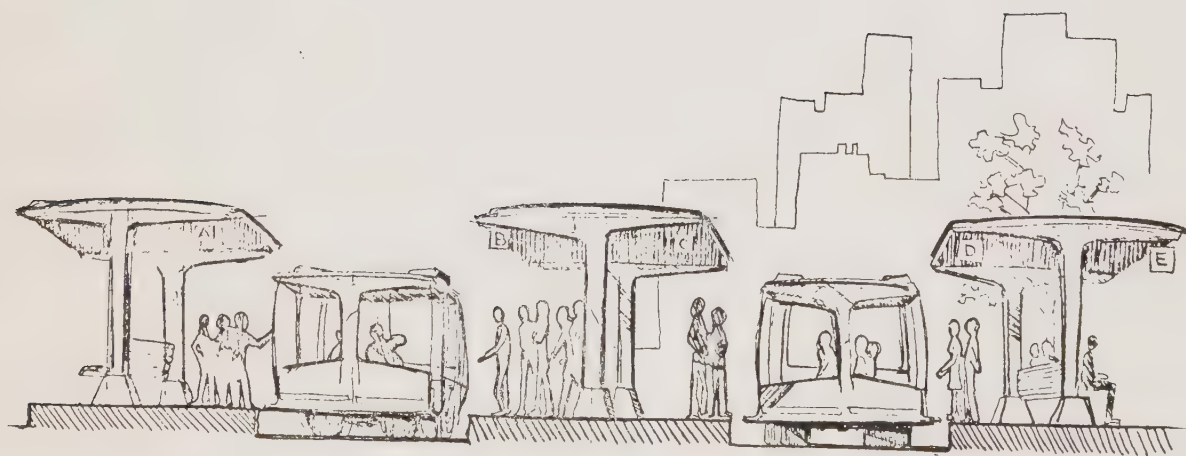


Figure III-58. TRAM LOADING PLATFORM

head of the aisles, where the fare is collected, rather than right at the tram, where people will come onto the platform ten at a time on each side in a Disneyland-like fashion. In this way, the loading time for the tram can be kept at a minimum. This type of fare collection system should be fast and efficient. With color-coded platforms for different destinations, it would be possible for people to find their tram very quickly, which, again would lessen congestion.

Finally, consider the routing of the vehicles. The tram has two main purposes as a passenger vehicle. These are to transport people from the edge of the CBD to their places of work, and to aid their travel within the business district during the day. The primary routes in the morning and evening then, would be between the SP station and the center of the business district, traveling through the Yerba Buena Center en route. As cars are phased out of the business district, the morning and evening routes would also include the parking lots to be constructed around the business district. During the day, the trams would run in a pattern to cover travel within the business district, but not that which enters or leaves the district. It is therefore hoped that the trams would replace any transportation which operates exclusively within the business district during the day, but not replace that which travels to and from other parts of the city. Routing for freight would, of course, be on a demand basis and kept within the vicinity of the business district.

The residential bus has the purpose of transporting people from their residences to nearby Muni and BART lines. It is to be used primarily as a feeder line. In doing this, it would operate in small circular routes, covering small areas with high load efficiency. The circular routes have the advantage over point-to-point routing in that their load remains much more even. Areas where this is presently needed

are the Sunset, the Mission-South of Market area, and to some extent, the Western Addition. During non-peak hours, these buses could be used extensively for inter-district freight hauling, or, as in the Mission, there might be a large demand for intra-district hauling.

### Conclusion

In general, we have tried to make the presently moderate to good public transit system of San Francisco a better system and, in particular, one which will be more easily able to adapt to the increased needs of the future. It is realized that several new ideas have been presented which are in need of a much greater study.

The first and most crucial of these ideas is that of proposing a dual-mode passenger/freight system. The problems arising from such a system are tremendous, especially if there is no flexibility of change allowed within the present system. The legal and union problems are by no means trivial and when further consideration is given to such a system these should be the first areas to be studied. Also the question of freight demand and usage has not been answered. Freight data has been extremely hard to locate, either from the Teamster's or from management such as the California Trucking Association. Again, legislation may be necessary in this area to make the system fly. Finally, there is the hardware question of how durable and pleasing to the eye a vehicle used in such a manner would remain under continued heavy use.

We feel, however, that the benefits of the system outweigh such problems. This is probably the first system proposed that provides such a unique and excellent answer to the public transit problem. The system not only is capable of handling present and future commuter loads but a use has been found for the system hardware during the non-commute hours when other systems presently in use lie idle. Another

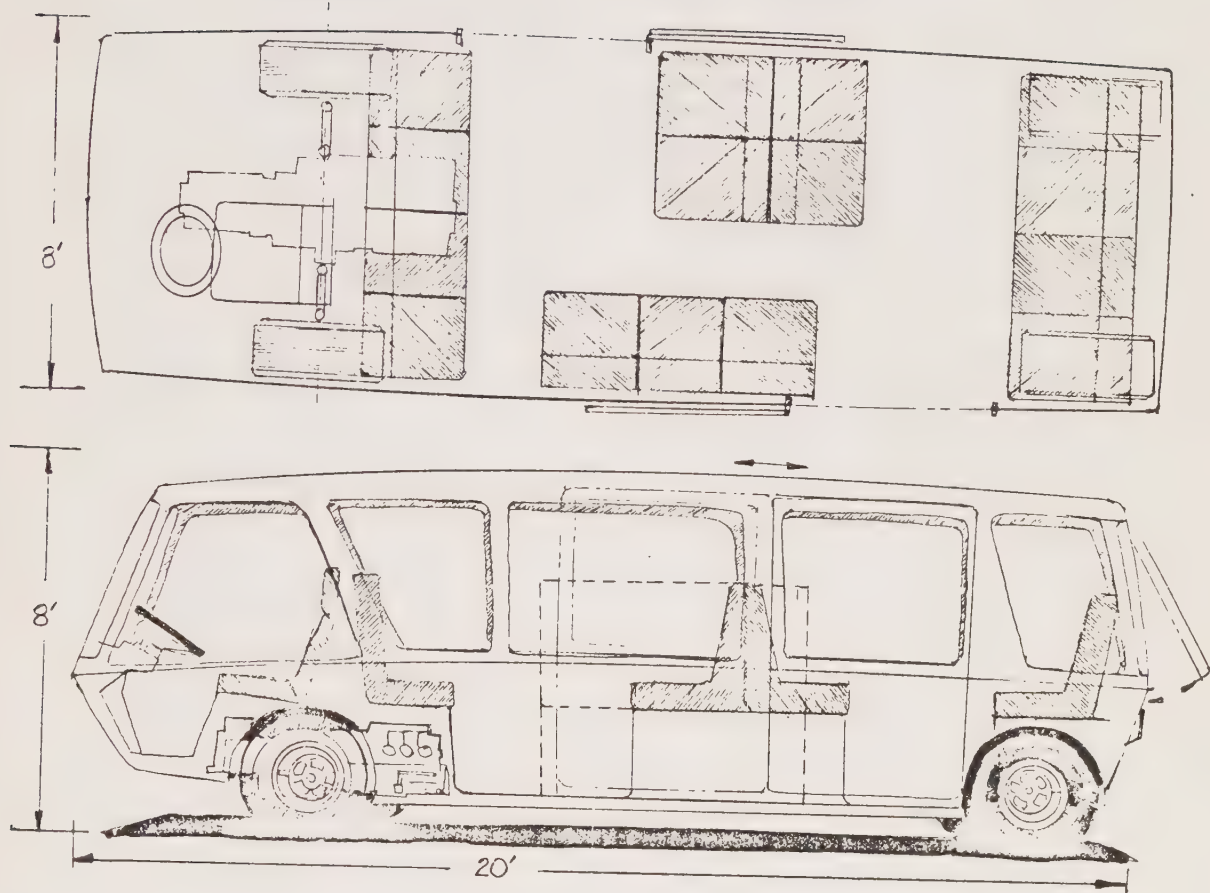


Figure III-59. DUAL MODE PASSENGER/FREIGHT SYSTEM

benefit of the system is it's flexibility. It can be moved to meet new areas of concentration and need as opposed to a moving sidewalk, for example, which is not capable of shifting if the need shifts.

It is for these reasons that we strongly urge that the system be at least set up on a trial basis to see if it is workable. If its merits could be shown to both the public and the business world it would give the state-of-the-art of public transit along with the City of San Francisco a new direction of growth.

An important idea introduced by Physical Community Design is the blocking off of corners in the Mission in order to allow for community and neighborhood centers. This concept is completely compatible with the system we are proposing and we highly recommend it. We would further like to point out that such community centers would have trouble functioning with the present public transit system, which is neither as flexible nor as personal as our mini-bus system.

It is apparent that we have introduced some new ideas that in theory provide excellent answers to the public transit problem. We have gone beyond the theory to some extent, but there are still barriers to be overcome if the system is to be realized. As mentioned, these barriers are mostly legal and planning problems, as we have solved the major hardware problems.

## B. Waiting Station Design

The basic purpose of these "stations" is to facilitate and encourage the people of San Francisco to use and enjoy using the public transportation available to them. One of the deterrents to using public transportation is exemplified by the old question "waiting for a bus?". These stations, equipped with seats or benches to accomodate 8-11 people and shade from sun or protection from rain for another 10-12, should to a long way toward encouraging use of the public transit system, thus cutting down private transit congestion and the necessity for larger and larger parking facilities in the city.

These stations will contain comfortable seating arrangements, copies of the public transit routes (possibly color coded for easy identification) available free, possibly a direct phone-line to a public transit secretary for assistance in using the public transit or for registering criticism or acclaim, and of course litter containers, ash trays and similar conveniences. These stations will also be able to be color and style keyed to each community.

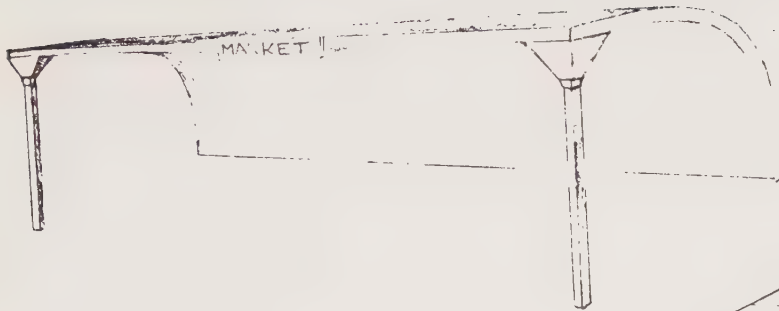
Various designs have been examined, the materials varying from polyurethane foam to plain wood and nails construction. These various designs are shown on accompanying sheets. Cost factors and estimates are listed below each.

While no detailed study has been made to determine where such stations should be placed around the city several possible types of sites are readily apparent. These might include: heavily used transit stops; remote transit stops where time between transit vehicles is long; and transit stops used primarily by shoppers who may be carrying parcels which need protection from rain. Other criteria for the placing of such stations can be presented but the main point is that all transit stops will most likely not have such waiting stations due to economical considerations.

As a result, we would also like to propose here that

each transit stop in the city be identified and that appropriate information be available at these stops. Such identification might include a silhouette type picture of the types of vehicles serving that stop, a listing of the headways of the vehicles serving the stop according to the time of day, and possibly a map of the routes the stop is on along with the rest of the routes in the city in a different color. Such information could be attached to the sides of the waiting station or placed on signposts where waiting stations are not placed. These signs would also be easily updated so that a change of routes would not necessitate the manufacturing of a completely new sign.

### Polyurethane Foam Sections

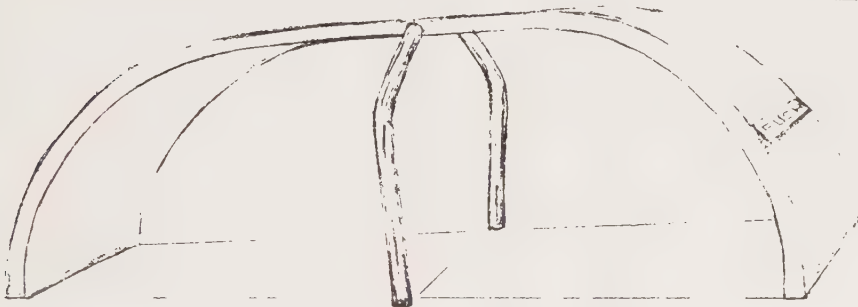


Wooden Structure

Cost Breakdown: 4 Sections - \$1300  
 11 Chairs - 150  
 Construction - 300  
 Finishing - 100  
 Foundation - 200  
 Area - 2.24 ft<sup>2</sup>  
 TOTAL \$2,000

μμμμμμμμμμ

### Polyurethane Foam Sections



Labor and Materials - \$1200/  
 Station  
 Area - 150 sq. ft.

Cost Breakdown: 2 Sections - \$630  
 8 Chairs - 100  
 Construction - 300  
 Foundation - 50  
 Area 170 ft.<sup>2</sup>  
 TOTAL \$1,500 (with financing costs)

Figure III-60. WAITING STATION-COST BREAKDOWN

### C. Municipal Railway Overhead Cables

The San Francisco Municipal Railway operates four types of vehicles:

- 1) Electric cars
- 2) Trolley coaches
- 3) Cable Cars
- 4) Motor coaches

Two of these vehicles, the electric car and the trolley coach are powered by overhead cables located above most of San Francisco's major streets. The purpose of this report is to investigate the feasibility of removing the overhead cables. The objection to having overhead cables in San Francisco is that the cables are an eye-sore. Three alternatives were available in remedying the present situation:

- 1) Place the overhead cables underground.
- 2) Provide the power by some other source.
- 3) Phase out the electric cars and the trolley coaches.

The San Francisco Municipal Railway researched the feasibility of changing the power lines (placing them underground). There are transit systems in existence today that use underground cables. The electric car, operating on rails with the powerline overhead, could be modified to use a physical system similar to the cable cars. Washington D.C. had an underground cable system until 1967. This system was finally abandoned (they are now using motor coaches) because of the maintenance expenses in changing the underground cables. This drawback, maintenance, is the only reason the San Francisco Municipal Railway has not installed underground cables. Every system they investigated had maintenance as a major problem. Reports of underground systems can be obtained from the Engineering Department of the San Francisco Municipal Railway.

San Francisco Municipal Railway has two solutions to the overhead cable problem. These solutions will be implemented

within the next two years. By 1973 they plan to use a different hook-up technique. Presently the vehicles receive electricity by having a rod push up on the overhead cables. The system they will install still uses overhead wires, but the connection will be made with a telescopic ring set-up. They will be able to move the cables above the sidewalks. This will reduce the unpleasant sights of overhead cables in the middle of the streets. Plans of the modified cable set-up and of the telescopic ring may also be obtained from the Engineering Department of the San Francisco Municipal Railway. Plans are also being made to install auxiliary motors on the electric cars and on the trolley coaches. There are a few battery installed trolley coaches operating in San Francisco today. If an auxiliary power source is feasible, the entire fleet will be changed from overhead cables to auxiliary motors.

The trolley coaches and the electric cars are here to stay. There had been plans to phase out the trolleys, but because of air pollution considerations the San Francisco Municipal Railway is now planning to purchase new trolley coaches and build more substations for these vehicles.

#### D. Transportation Considerations of Yerba Buena Center

Yerba Buena Center is a convention-entertainment-office complex planned by the San Francisco Redevelopment Agency to occupy an area South of Market Street bounded roughly by Second, Fifth, Market, and Harrison Streets. Thoroughly prepared designs have been proposed by the Agency; however, a court battle now in progress over relocation of present tenants threatens to delay implementation.

Assuming that the legal hurdle is surmounted, the expectation is held that 1975 will see completion of most of the following:

- 1) a 30 story office building on Market Street
- 2) a 350,000 square ft. exhibition hall
- 3) a 14,000 seat indoor sports arena
- 4) a 2200 seat theater
- 5) parking for 4000 cars in two overhead structures
- 6) a 1000 room hotel
- 7) a downtown airline terminal

Commitments have already been made for 25, 15, and 8 story office buildings adjacent to the central blocks of the center.

Transportation within and to the complex is planned to include a moving sidewalk above street level from near Market to the sports arena. Access to the Center will be enhanced by an underground passage from the BART/MUNI Powell Street Station. The proposed airline terminal will have fourteen bus stalls below street level and a taxi drop-off zone. Off-street service bays for the exhibit hall and some other buildings are also planned. The multistory parking garage will have circular drive-up entrances at Mission and Third and also Howard and Fourth.

If Yerba Buena Center is built, it should become the thrust of new construction South of Market, thus making the transportation system along Market the spine rather than the splint of the CBD.

E. Communications in the Modern Community: a Form of Transportation

The following is a brief outline of the possibilities of a communications system for the near future, possibly within 10-15 years. As can be seen from the description, the possibilities of such a system are almost without bound. We have presented this idea here because there is no other place in the report, except transportation, where such a system might be suggested.

In light of the fact that this is a two year project we suggest that for next year a separate group be assigned to study the possibilities of such a system. Faculty presently interested in this area are Dr. Donald Dunn of Engineering Economic Systems and Dr. W.R. Kincheloe of Electrical Engineering.

Sufficiently good communications can profoundly influence the life of the city dweller. Technical developments that we possess now would make it possible for a home communications system to perform many of the functions that normally involve cross town or around-the-block transportation.

We present here in outline form a proposal that the transportation hardware group feels is worth considerable further study.

A small computer console and associated television monitor in each home would allow:

- 1) Automated Goods Delivery System - (Goods like groceries could be ordered by the computer, loaded onto a moving belt to central distribution center, then via underground belt to individual house or apartment basement).
- 2) Computerized Shopping - (In conjunction with #1-goods of any kind could be ordered from a comprehensive catalog; their availability checked at the touch of a button. Once they are ordered, the financial details would be handled automatically by the computer via a link to the store and the customer's bank).

- 3) Selected Entertainment - (Cable television would provide regular television - or selected special events such as movies - available any time, day or night.
- 4) Information - (a) Daily News - person could look at news summary, then ask for in depth article on the specific events of interest. (b) Weather Reports - specific news of any weather in the world on request. (c) Community Billboard. (d) Educational Presentations - could select lectures or shows on desired subjects at any time. These, like the movie requests, would be updated weekly. (e) Specific Information Requests - (Library function, i.e., how to make bread, etc.).
- 5) Television-Telephone to other similarly equipped homes.
- 6) Complete Financial Link - your account with bank, stores, and employer tied together but actuated only on request.
- 7) Community Services Programs - (Income tax or interest calculations, stock market information, this weeks homework for junior, plan tonights dinner with randomly accessed menu.
- 8) Emergency Use - (Touch of button alerts police, fire department or psychiatric aid to your location - no time wasted).

## F. Automatic Toll Collection System

In considering an automatic toll collection device suitable for use on the bay area bridges, the primary requirement is that the vehicle be able to pay the toll without stopping or substantially slowing. Provision must also be made for vehicles not participating in the automatic collection system to pay the toll in the regular manner and to apprehend those vehicles who violate the systems of toll collection.

At present, there does not seem to be a satisfactory method for accomplishing these goals. The key to efficient automatic toll collection is optical character recognition. That is, a computer reads the license number of your car as you pass over the bridge, stores the pertinent information, and bills you at the end of the month. This system will be discussed in more detail later.

An automatic collection system could be built using current technology. Basically, a fluorescent paint stripe would be sprayed on the underside of the vehicle and a detector on the bridge would check to insure that the stripe was there.

This detector would be a device set in the roadway with a transparent top. It would contain a light source, preferably ultraviolet, which would illuminate the underside of the vehicle and a photo-electric device to detect the fluorescent paint reflections. The light source should be vertically oriented so that it can not shine into a driver's eyes. The area over the detector must be covered to prevent interference of sunlight (i.e., there must be a roof over the automatic toll gates). In addition, the detector would have a pressure sensor located in the path of the vehicle.

The operation would be as follows: when a car passed over the detector system, the pressure sensor would detect

the vehicle and warn the photo-electric device that it should expect a reflected signal. If the signal were not forthcoming, the detector would signal an alarm system to apprehend the vehicle. The cost of this portion of the system would be about \$1,000 per lane.

The alarm system would consist of television cameras mounted in the roof above the automatic toll collection system. To identify correctly the violating vehicle, it is convenient to restrict lane changing for roughly five hundred ft. beyond the toll plaza by means of upright flexible plastic posts (incidentally, distinct lanes are necessary over the actual detector). These television cameras would be focused on the individual lanes and would feed the picture to a central location where people would be monitoring the pictures. If a detector signaled an alarm, it would signal this central viewing area and indicate which lane was involved. A video recording of the picture from the lane involved would start automatically in case the personnel in the central viewing area were temporarily occupied (or drinking a cup of coffee). Since only twenty or thirty seconds of picture would be necessary, the system might incorporate a video disk recorder (an "instant replay" machine) such as that manufactured by Mactronics, Incorporated of Palo Alto. The operator would then communicate the vehicle description and license number to the appropriate police units stationed at the end of the bridge. The cost of the components of this system would be: cameras, about \$800, depending upon lenses; disk recorder, \$2,000; viewing monitors, \$100 to \$200; or a total cost per lane of approximately \$5,000, including installation costs.

Payment of the toll would be on a subscription basis. One would pay a certain sum per month for the privilege of having the fluorescent stripe on his vehicle. The stripe would be painted at an official painting and test station,

not necessarily located on the bridge. This station would take care of the necessary paper work and would have test lanes to insure that the stripe would respond correctly. The paint stripe could be renewed or changed annually.

For convenience, a bumper stricker should be placed on the car at the time it is sprayed so that the vehicle may be identified without crawling underneath it with ultraviolet flashlight. The flourescent paint used would be transparent so that it would be inconspicuous to the casual observer.

Since this would operate on a subscription basis, the system would appeal mostly to daily commuters. For people who use the bridge less regularly, normal toll collection stations must be provided. This system could also be used with the one-way fares presently in use around the Bay Area. With this in mind, four automatic toll collection lanes and perhaps up to eight regular toll stations would handle the traffic flow.

The principle weakness of this system is simply the ease with which anyone could paint the stripe on his own vehicle and avoid paying any toll. This could probably be controlled by periodically imspecting vehicles who use the automatic toll system for the bumper sticker. This might be done from the television monitors, if the resolution is great enough.

Returning to the originally suggested automatic system, we repeat that the key to automatic toll collection is optical character recognition. In preparation, the state of California should, at the earliest convenience, change the format on its vehicle license plates. The numbers and letters should be the U.S. Standard Character Set for Optical Character Recognition Alphabet to facilitate optical reading of vehicle license plates. In addition, the spacing should be changed such that a blank space is provided after the vehicle license number. This is to allow additional

information such as, perhaps vehicles belonging to car pools, state or city vehicles or public transportation vehicles. In addition, the plates should be painted such that the letters luminesce in an ultraviolet light while the background is black to the ultraviolet.

Present day optical readers are produced by IBM, Control Data, Hewlett-Packard and Philco. They read at a rate of one thousand characters per second and directly feed the information to the computer system. The present IBM 1288 Optical Page Reader reads both standard gothic and handwritten Alphanumeric alphabets. When used with the IBM 360 computer system, up to eight readers may be connected per multiplexer channel input and there are many multiplexer channels available. This would allow sufficient channels to control possibly, the four main bridges in the Bay Area, from a single computer.

The present limitation of optical readers is that they read from printed paper and the character to be read must be solidly inked. There is no device presently available that will allow the projection of numbers from an optical lense instrument onto printed paper in a solidly inked form nor will these optical readers read from a flourescent tube, such as a television picture tube.

However, this problem will probably be solved within a few years. Ths Rabinow Engineering Division of Contral Data Corporation in Rockville, Maryland has designed a high resolution machine that reads alphanumerics with a rejection rate on the order of one character in two million. They are willing to guarantee the reading of a ten digit number on drug labels with an accuracy greater than one error in  $10^{50}$  labels read, when the U.S. Standard Character Set for Optical Character Recognition is used. In fact J. Rabinow believes they will soon build an optical scanner which can read faster than the human retina.

In addition, the Rabinow Engineering Division is presently working on an optical character recognition device to read serial numbers from passing freight cars. This device, when completed, should be directly applicable to an automatic toll collection system.

#### G. Use of the Mini-bus in Residential Areas

In this application, we are going to look at a typical residential area in the city, where by typical we mean from the aspect of providing a transportation system. This area, the Sunset, will most likely remain very similar to it's present condition. Though Physical Community Design has presented plans for the blocking off of streets in other areas such as the Mission, the system we will propose will not only be capable of handling such changes but will make them more useful to the residents of such areas.

We have also tried to use existing systems and structures in our design along with attempting to maintain the character of the city in these areas. In general, we have kept some of the main bus and trolley routes while integrating our mini-bus into the area.

A. The Sunset - In general, the transit system now in operation in the Sunset is adequate but bordering on marginal. The automobile and parking situation is in very good shape. Most houses have a garage with room for two cars and in many cases enough room in the street for the parking of another. As a result, we will not spend any time on auto traffic restriction or re-routing. The public transit situation could use some improvement, however, both from a hardware and also a systems viewpoint. To alleviate this transit problem we propose a system of mini-buses to be used as feeders for the main bus and trolley lines.

Routing in the Sunset District - The object of this routing study is to instigate a feeder routing system for the main lines (#71, 66, 72, L, and N) to the downtown area and CBD. In an effort to reduce predicted congestion in downtown due to the proposed elimination of all but one lane of passenger cars on Market Street, we feel that initiating a series of intra-district feeder lines utilizing the 15 passenger mini-buses, discussed in another section of this report, could be the impetus necessary to increase use of

public transportation from its present 50-60% use (almost entirely rush hour and school usage with a very small percentage shoppers) to better than 90%.

The advantage of the small mini-buses are 3-fold:

- 1) Short waiting times; low cost mini-buses can be scheduled so waiting time is under 3 minutes maximum;
- 2) Fast and easy loading; as the minibus has a seating arrangement which allows every seat to be near a door;
- 3) Shorter trip times because of the fast loading and the 10-12 mph average speed.

The proposed conventional bus route changes and cancellations are on the map which follows. Four new mini-bus routes are advised to serve all of the main arteries. There will be approximately 25 mini-buses needed to cover these routes in order to realize our goal of 3 min. minimum headways between mini-buses, handling approximately 1,300 people per hour. This number will have to be increased to about 50-75 mini-buses during the peak rush hours to handle the increased loads. The new system will boast that almost everyone in the Sunset will be no more than one block from a mini-bus or bus line.

The following are the Minibus Routes:

- 1) Route A is 2.7 miles long, makes twenty stops, and still traverses the distance in less than 15 minutes. This means that it would take only 5 mini-buses to get wait times down to less than 3 minutes each. It would service route #66 and Street Car Line "N".
- 2) Route B is 2.4 miles long, makes about 12 stops, circles the Sunset Reservoir and returns in approximately 10 minutes, thus needing only 4 mini-buses to cut wait time to less than 3 min. This line services both Coach route #28 and Street Car Line "L".
- 3) Route C is 2.0 miles long, makes only eleven stops and circles the loop in 9 min., thus needing only 3 mini-buses for the 3 min. criterion. This mini-bus services both Street Car Line "L" and Coach route #72.

- 4) Route D is 4.25 miles long with 35 stops and each mini-bus would traverse the route passing the West Sunset Playground in about 20 minutes, thus needing 7 mini-buses to serve it.

This route serves the beach, Coach route #72, and Street Car Lines "L" and "N".

As stated previously, about 25 mini-buses would be needed during the non-peak hours leaving about 50 mini-buses free to serve as delivery vans. These mini-buses would cost the same as the trams with the same operating costs.

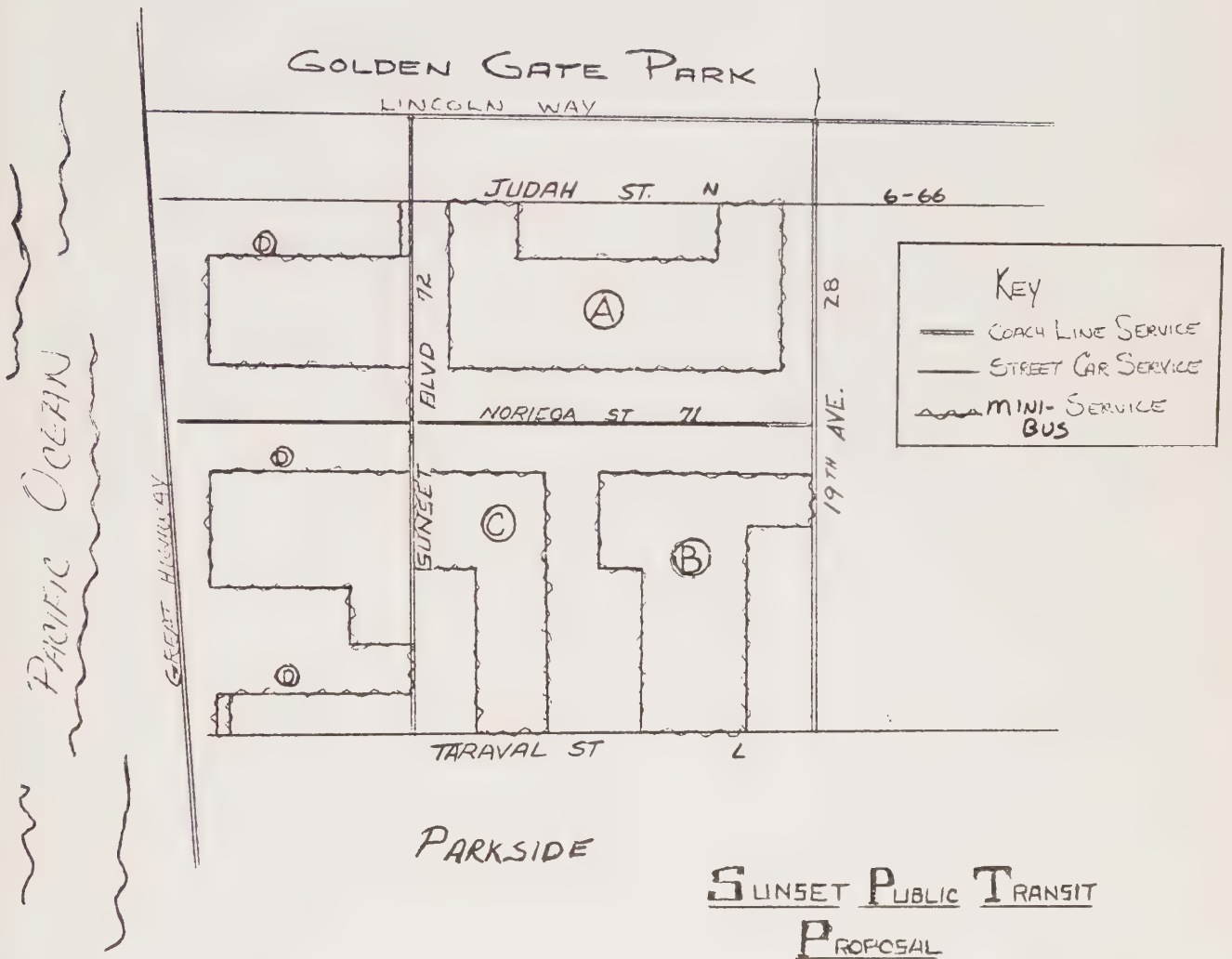


Figure III-61. SUNSET PUBLIC TRANSIT PROPOSAL

#### H. Observations on Downtown Parking

In 1965 the Downtown Parking and Traffic Survey (DPATS) was undertaken by the Department of Public Works, with assistance from numerous other concerned agencies. It presented its extensive findings in 1966, the principal conclusion being that an additional 12,300 spaces of off-street parking would be needed by 1975. A major portion of the recommended addition is located 1 to 2 blocks south of Market Street, with several other major facilities proposed for the financial, retail and civic center areas. The attached map shows the area studied and the principal recommendations, along with the areas of greatest deficiency.

Also attached is a summary of the report, which has in turn been abstracted from a resume of DPATS by the Parking Authority (February, 1967).

We have not attempted a detailed study in this area ourselves, but have merely sought all the available information and various viewpoints on the issue.

The Parking Authority is a city agency which aims at both stimulation of private undertakings and construction of public facilities to meet the needs of a long-range off-street parking program. Their aim is to provide downtown parking as close as possible to the destinations of drivers, though they are aware of the constraints on that goal. The City Planning Commission favors a program of fringe parking "belts" outside the core areas. The situation as it actually exists can best be described as a compromise between these two views. There are indications, however, that very few additional facilities will be provided in the downtown core areas in the future, in spite of the current and projected expansion of office floor space downtown. This "building boom" is widely attributed to BART, and is noticeable for the lack of parking facilities to go along with many of the new buildings. San Francisco

is probably the only city, in fact, which has begun to stipulate a maximum of parking space per new construction, rather than the traditional minimum; in the financial district the maximum is now 7% of the total floor space of any new building.

The attitude of the Chamber of Commerce was revealed from an interview with Mr. Ed. Lawson, who has been involved in various planning efforts of the Chamber. They are the principal force responsible for a current trial program to eliminate on-street parking during certain hours on selected streets in the financial area, with the aim of improving traffic flow and aiding deliveries during those hours. The Chamber's whole outlook has been one of encouraging BART and transit in general while discouraging any increase in auto travel to the CBD. This policy is most realistic in view of the fact (from the DPATS) that 69% of the work trips ending in the financial district are now made by transit, compared to 31% by auto. It is also widely recognized that very few, if any, increases in vehicular capacity will occur in the form of new freeways. Hence Mr. Lawson's interesting observation that the need for parking is limited by the existing freeway capacity; it's usually the other way around.

Our only conclusion regarding parking is that any increase at all should be in off-street, south-of-Market facilities, which are best when incorporated into entire new structures like the Yerba Buena, and could profit by special tram service to the CBD. Even these facilities, however, should not be built unless studies are undertaken to make certain that there will not be a resulting adverse effect on local streets or freeway capacity. (The spectre of a huge increase in parking capacity bringing about a "need" for a new freeway should be kept in mind, when making "parking" decisions.) If an expenditure for parking were

directed instead to a BART feeder service or other enhancements to transit, the overall results might be more favorable. What is needed, in short, is a broad enough outlook so that solutions are sought for transportation problems, rather than parking problems, transit problems, etc. In the absence of any such official position, it can only be hoped that the results of the usual compromises among various influences will be favorable ones.

## I. Summary of the San Francisco Downtown Parking and Traffic Survey

1975 Parking Supply and Demand - In projecting parking supply and demand conditions to the future, 1975 was chosen as the horizon year. The method of projecting parking demands to the 1975 level was a five-step process. It involved:

- 1) Forecasting growth for the entire DPATS area
- 2) Distributing this growth among the smaller functional areas
- 3) Estimating diversion by the BART system
- 4) Adding a trip generator
- 5) Applying growth factor for each functional area

The estimated demand for 1975 exceeds the estimated supply by 30,000 vehicles.

The intersections with the greatest 1975 parking deficiencies are 4th and Market, Polk and Golden Gate, Sutter and Powell, Pine and Montgomery, Montgomery and Sutter, Jackson and Grant Avenue, California and Montgomery.

Parking Spaces Needed - The needed parking space to satisfy parking needs in 1975 would be 12,300 spaces.

The districts with the greatest shortage of space are: the financial district with 3,700 spaces in the northeasterly sector and 1,100 spaces in the southwesterly area, and the retail area with 2,800 additional spaces, the Civic Center will produce a need for 2,200 more spaces, Market Street from 9th Street to Van Ness Avenue with its new office developments will produce a need for 1,200 spaces, and the eastern end of Market Street from the Ferry Building to Main Street with a shortage of 700 spaces and the Broadway/Chinatown area with a daytime shortage of 600 spaces.

### DPATS Recommendations

An analysis of average walking distances indicates the parking facilities should be located within 700 ft. of the areas they are intended to serve. Cheap rates will

encourage parkers to walk further, but with current land, construction, and operating costs, a low rate schedule such as that of the Fifth and Mission Garage seems to be a thing of the past. As mentioned previously, there will be a shortage of 12,300 spaces in downtown San Francisco by 1975. If facilities of adequate size are regularly spaced within the recommended parking areas, they should suffice to serve 90% of this need. The following parking locations are recommended to serve the area mentioned:

#### Financial Area

- 1) South side of Mission Street from Main to Second Street
- 2) Sacramento, Washington, Kearny and Sansome Street area
- 3) East side of Kearny Street between Bush and Pine Streets

#### Retail Area

- 1) Sutter-Stockton Extension
- 2) Anna Street site
- 3) Third and Mission site
- 4) Fourth and Howard - Yerba Complex
- 5) Ellis-O'Farrell (reconstruction of present site)

#### Civic Center Area

- 1) North site of Mission Street - 9th to 11th Streets.
- 2) Turk-Larkin site
- 3) Commerce High Playfield site (conversion to a parking garage)

#### Ferry Building Area

- 1) Stewart-Mission Street site

#### Broadway-Chinatown Area

- 1) Vallejo Street - Stockton to Powell
- 2) Pacific, Broadway, Montgomery, Kearny

Nob Hill Area

- 1) No recommendations

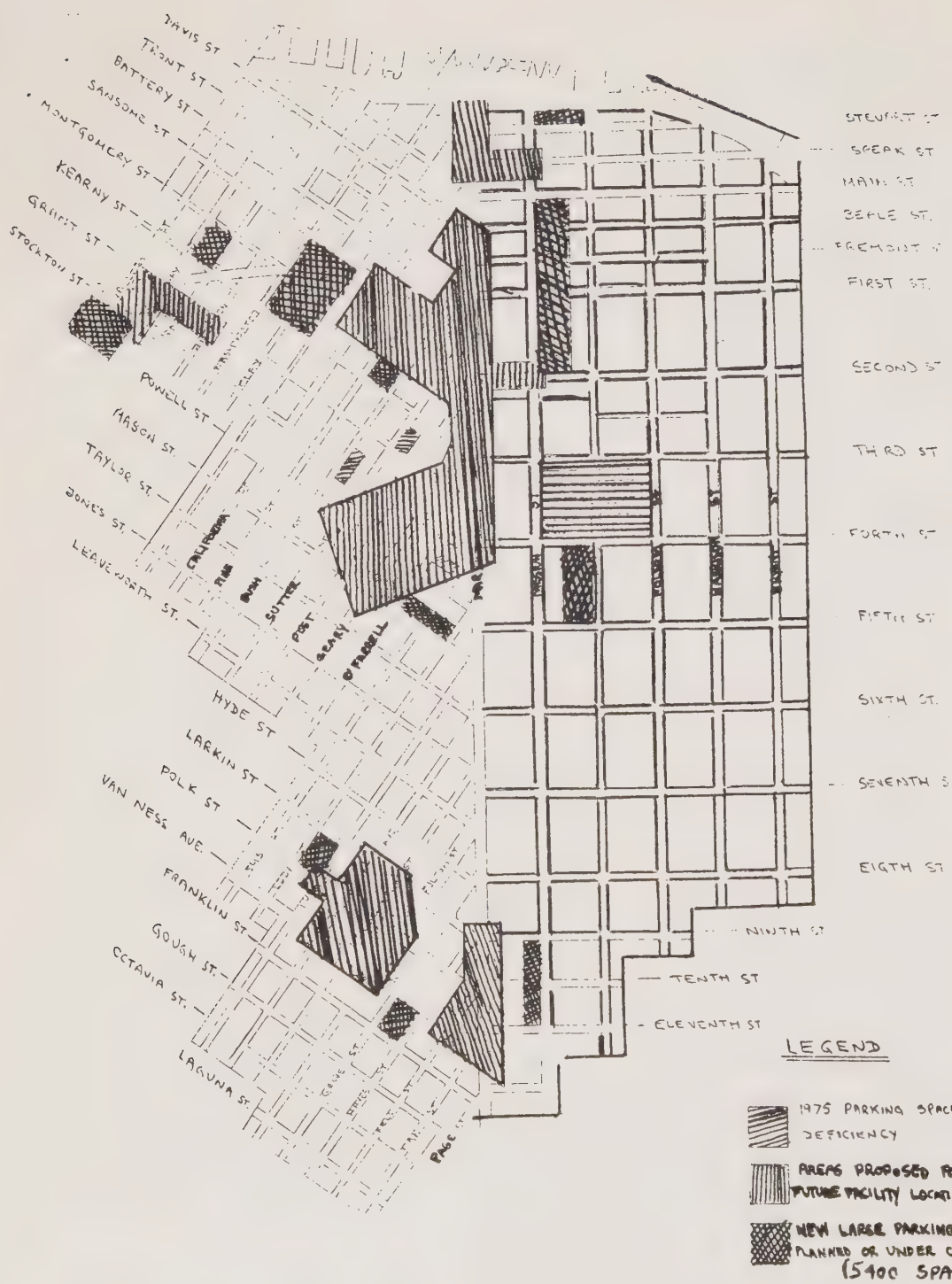


Figure III-62. PARKING FACILITIES

### Appendix III-M

The following is an excerpt from W.W. Harman, O.W. Markley, and Russell Rhyne, The Forecasting of Plausible Alternative Future Histories: Methods, Results, and Educational Policy Implications. (Submitted to the Organization for Economic Co-operation and Development, March 1970.) pages 53-56.

#### Analysis of revolutionary potentials

The alternative-future analysis previously described was constrained by an assumption of gradual and non-discontinuous changes in societal functioning and prevailing values. As there is ample evidence of revolutionary fervor in contemporary United States society, the possibilities for discontinuous social change due to attempted revolution were examined in a separate analysis. The framework used is a synthesis of treatments by a number of writers. In essence it is conceptually based on a hypothesis stated by Chalmers Johnson that "so long as a society's values and beliefs and the realities with which it must deal in order to exist are in harmony with each other, the society is immune from revolution." When this analysis is coupled with that of the preceding section, it is possible to identify potentially explosive misfits between some alternative futures and particular sets of needs, beliefs, and values.

This analysis has attempted to consider (1) the kinds of needs -- both personal and social -- which must be met by society; (2) the ways in which commonality and compatibility of beliefs and values in society contribute to homeostatic reactions to change; and (3) the typical stages of a society experiencing increasing disequilibrium, the dynamics of their development, and the characteristics of the society at each stage.

In brief summary, the stages of a society experiencing the initial symptoms of disequilibrium appear, from studies of historical revolutionary episodes, to be:

- (1) Individual Disorientation. The old answers of society no longer work, at least for some people; hence unpredictability results, and the individual is confronted with conflicting interpretations of events. Providing answers and offering durable ideas are part of the "promise" of many movements which arise in a disequibrated society.
- (2) Increasing Individual Deviancy and Normative Dissensus. The personal tensions of social actors experiencing disorientation lead them to deviant behavior as a means of release. As a result, the norms of the social system are challenged and broken by persons who are neither sick nor criminal. Consequently, laws attain much higher saliency, and it becomes hard for the system to distinguish between dysfunction-inspired protest and behavior that represents the now-disguised deviancy of criminality or ill health.
- (3) Proliferation of Corrective Norms and Organizations (Advanced Complex Societies). In piecemeal attempts to deal with dissynchronizing conditions, an increasing reliance is placed by the society on governmental and institutional interventions to perform patchwork correctives, including legal sanctions and incentive systems to take the place of now inappropriate values and standards.

As these attempts are observed to be inadequate, the society may experience more advanced symptoms of disequilibrium:
- (4) Consciousness of Relative Deprivation and Resulting Protest. As personal tensions continue and increase, various social actors come to believe that the cause for these tensions lies not with themselves but with the injustices of society perpetrated on them. This corresponds to the emergence of relative deprivation. Relative deprivation refers to man's perception of discrepancy between his legitimate "want-expectations" and society's willingness to fulfill them. ("Want" here refers to normative desires arising from needs, values, and beliefs.) Once an actor comes to feel relative deprivation, he is much more likely to engage self-consciously in protest against perceived injustices.

- (5) Emergence of Multiple Ideologies, Politicized Protest and Societal Fragmentation. The need to legitimize protest behavior and collective reflection leads to ideologies which changes a protestor's perception of his situation and which provides him with new norms of behavior. Alternative value structures are created, many in competition -- both with themselves and with the older prevailing system. Mature ideologies have both a goal for societal change and a set of tactics for bringing about the ideal. As a result, ideological protest behavior has a decidedly political flavor.
- (6) Power Deflation. When the trust and confidence which has been supported by shared values breaks down, a process accelerated by the emergence of competing ideologies, the normal procedures of inducing appropriate behavior also break down. As a result, the exercise of control by societal authorities comes to rely increasingly on the use of force, and power begins to replace consensual authority.
- (7) Crisis in Authority. Power deflation leads directly to challenges of the central social authority's right to maintain a monopoly over the use of force. If the system is unable to develop policies which will maintain the confidence of the non-deviant actors in the system and its capacity to move toward resynchronization of values, a loss of authority will ensue. A police state may maintain "Law and Order" in such a circumstance, but normal social process will continue to break down and the society will begin to decline in viability.

Appendix III-N  
The Difficulty of Enforcing a Housing Code

Excerpts from a report by an actual housing inspector for Prince Georges County, Maryland, outside of Washington, D.C.

"What I wanted to tell you, was of the difficulty of enforcing a housing code. Housing codes are laws that state how much facilities; light, heat, etc. are to be provided by landlords, and also what the responsibilities of tenants are. Most of the actions are against landlords, in effect, policing white collar criminals.

Seeing that tenements are heated does not have the public or official support of apprehending a kid who knocked over a liquor store for fourteen dollars. The specialization of police, who represent the most vigorous official action of the community, in the first type of crimes, those against property, makes police hated by the poor. It also gives everyone the impression that the system is more concerned about property than life.

I am suggesting that crimes against life be prosecuted with vigor. All that preventive detention that Mitchell is talking about isn't needed to scare the hell out of a rich landlord. The few times that they have actually been arrested and taken to jail, they are really ticked.

If police regularly helped in this kind of enforcement, it might indicate that the city or county cared about something other than money.

Also, due to the present unequal distribution of city services (police and fire included) any city official who works in that neighborhood will be presented with the whole gamut of problems; whether he is a housing inspector working on a program in the area, or a youth worker, he may be asked to stop a man in the street with a gun or to help someone get their welfare check. It used to be that policeman ful-

filled this function, as a representative of larger society, its laws, and its services. Cops just don't give ice cream cones to lost little black kids anymore. I would suggest not that police be replaced by social workers and nurses, but that police assist other community service officials working out of any neighborhood center perform some positive services for the people."

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Appendix III-0

Current Funding

+6% annual inflation

I. 5 Health Centers (exclusive of sanitation inspectors)

\$2,800,000

Staffing-add 15% fringe benefits

MD	(224)	\$22,000
Nurses	(108)	14,000 (max)
Clerics	(18)	6,500
Porters	(10)	6,500

Maintenance work by Dept. of Public Works

II. 5 Mental Health Centers (420 employees)

4 City-owned centers----\$ 5,344,000 (including in-patient services)

MD	(30)	22,000
Psychologists	(12)	15,000
Psychiatric So-	(18)	14,000
cial Worker		

1 district contracted out to private clinics and hospitals-----\$ 1,200,000

III. Hospitals: San Francisco General

Laguna Honda 46,700,000

Hassler (including bond interest, debts, retirement depreciation maintenance).

IV. Dept. of Health Administrative Costs 350,000

(total 700,000, 1/2 of which is included in the \$46 M)

## Need for a Comprehensive Health Care Program

			All +15% fringe benefits
50 Community Health Aides	@ 7,000	\$	350,000
24 Public Health Nurses	@ 14,000 (max)		316,000
3 Supervisory Nurses	@ 16,000		96,000
1 Medical Doctor	@ 22,000		22,000
1 Sanitarian	@ 15,000		15,000
1 Statistician	@ 17,000		17,000
1 Administrator	@ 20,000		20,000
1 Secretary	@ 7,500		7,500
$\frac{1}{2}$ Physical Therapist	@ 18,000		9,000
$\frac{1}{2}$ Occupational Therapist	@ 18,000		9,000
			\$ <u>861,500</u>
7 Program Areas	@ 861,000		6,030,500
			+ 15% =
			7,000,000

### Typical Health Center - (50,000 pop. area)

- geared for 20,000 patient area (flexible scale)

20 Physicians (1/1000)	@ 22,000		440,000
16 Nurses	@ 14,000		244,000
8 Lab. Technicians	@ 12,000		96,000
6 Secretaries	@ 7,500		45,000
1 Receptionist	@ 7,000		7,000
1 Porter	@ 6,500		6,500
5 Psychiatrists	@ 25,000		125,000
5 Psychiatric Social Workers	@ 16,000		80,000
2 Psychologists	@ 18,500		37,000
			\$ <u>1,080,500</u>

7 Centers @ \$1,080,000 (approx)    7,563,500

### Hospitals

San Francisco General	
Laguna Honda	65,000,000
Hassler	
+ new hosp. south of market	

Hospitals (cont.)

Alcoholic and Drug Rehabilitation Farms and Centers	8,000,000
Mental Health Clinics	3,500,000

Centers and Programs (approx.)	76,500,000
	<u>13,500,000</u>
	\$ 990,000,000

\$80,000,000 present estimate  
+ 6% inflation

# Appendix III-P

## Employment Service

### Training & Educational Programs - Projected FY 70

(Condensed from CAMPS Report)

<u>Openings</u>	<u>Programs</u>
260	Job Corps
750	MDTA-OJT
4,000	Adult Basic Education
740	MDTA-Institutional
240	Bay Area Urban League
544	Work Incentive Program, DSS ETD
28,105	Vocational Education
994	Apprenticeship-Div. of App. Standards
***	Employment Service (5 offices)
	Unemployment
2,200	Neighborhood Youth Corp
1,000	Vocational Rehabilitation
1,500	NAB-Jobs (3 counties)
90	CEP (Concentrated Employment Program)
20	CEP-(Mission Rebels, Inc.)
2,400	CEP-CSES Prevocational Prep. (Orientation)
38	CEP-CSES Follow-up
450	CEP-Basic Education (Heald's College)
150	CEP-Adult Work Training Program (AWTP)
	(Youth For Service)
	CEP-New Careers
4	Calif. State Dept. of Corrections
95	San Francisco CSC
40	Arriba Juntos
150	CEP-Intensive Training Unit
15	CEP-Arriba Juntos Work Training Program
300	CEP-Chinatown English Language Training
300	CEP-Mission English Language Center
36	CEP-Child Care
	EOC of San Francisco
13	Chinatown-North Beach Area Devel.
46	Second Chance
2	Hunter's Point-Bayview Credit Union
44	Headstart-Full Year
25	Mission Area Community Action Program
20	Hunter's Point-Bayview Area Devel.
7	Self-Help for the Elderly (Chinatown-North Beach)

Openings

3

47

---

44,632ProgramsPlanned Parenthood Education Project  
(Chinatown)Planned Parenthood Education Project  
(North Beach)Planned Parenthood Education Project  
(Hunter's Point)Planned Parenthood Education Project  
(Bayview)

Foster Parents

# Employment Service\*

<u>Program</u>	<u>Est. Slots 1970</u>	<u>Unmet Needs</u>
NYC	2,200	1,335
MDTA-Inst.	740	10,500
Voc. Rehab.	1,000	6,514
WIN	544	2,000
Adult Basic Ed.	4,000	64,150
Vocational Ed.	28,105	8,500 to 23,150
Social Welfare	INA	4,500
Urban League-OJT	240	400
NAB-JOBS	1,500	6,000 to 9,000

\*Condensed from CAMPS Report

## Appendix III-Q

### Proposal for a San Francisco Police Department Command and Control System

Recent emphasis on command and control centers for the centralized processing of citizen requests for police service is causing a revolution in the police communications function. Over the years, the use of radio communications from police headquarters to policemen in field units has evolved into dispatching operations which adequately meet the needs under normal conditions. However, when major disaster strikes a city (riot, flood, civil disturbance), the dispatchers are faced with resource management decisions which are better made by senior, experienced police managers.

Command and control is a relatively new concept for municipal police departments. As developed in the U.S. military organizations, command and control has represented specialized function, equipment, personnel, and facilities required to support a commander in his efforts to control operational forces. Used in the military context, efficiency and effectiveness are the primary beneficiaries of command and control. As used by municipal police departments, the term has taken on many different meanings.

The command control approach can be very simply stated: Provide assistance for the operational head of police resources to facilitate his command of policemen and police vehicles through control of communications networks and equipment at his disposal. For purposes of this description, a senior officer would be designated commander of resources during his shift or watch -- "watch commander." The ultimate title and rank of this office is not important, except where they relate to ensuring appointment of a watch commander of sufficient experience for decision making in police resources management, and of sufficient rank to guarantee command response.

The modular command and control center involves the application of command control techniques to the police mission of taking complaints and dispatching policemen to answer these problems. In general, the approach divides the operation into two distinct functions: command and control.

The command function is seen as an overall management effort to assure effective use of police resources in the maintenance of law and order. An organizational position, "watch commander," is described to carry out the command role, and equipment is suggested to assist in this effort. Equipment consists of a command complaint station and a command dispatching station that provide complete monitoring and override of the control activities.

The control function is described as the operations performed in taking complaints from citizens and the mechanics of radio dispatching. Control is interpreted to apply to all communication services: telephone, teletype, and radio. It also includes any information storage and retrieval required, as well as operating status display boards or other devices. A complaint station is suggested for the telephone message receivers who take complaints from citizens. A dispatching station is suggested for the efficient utilization of radio communications and dispatching of police vehicles to the scene of action.

A description of the procedure for receiving complaints is outlined at the end of this appendix.

According to the Task Force Report: Science and Technology, "A computer assisted command and control system offers many new possibilities for deployment and control of a police force." <sup>1</sup>

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<sup>1</sup>Task Force Report: Science and Technology. A Report to the President's Commission on Law Enforcement and Administration of Justice, (Washington, D.C., Government Printing Office, 1967), pp. 28 and 22.

An evolutionary concept comprised of a command and control system is shown in Fig. III-63. An automated command and control dispatching system forms the basis of the system. Other features, such as car locators, will be available in five years and can be added to the basic system on an evolving basis until full automation and desired results are achieved. This "full-up" system consists of a dedicated computer, dispatch consoles, base station encoder/decoder video data terminals, equipment associated with units in the field (such as teleprinters and car locators), and various external hook-ups to the computer (such as hook-ups to criminal information systems). This description is by no means exhaustive, but it does indicate a probable evolutionary path for realization of a fully automatic system.

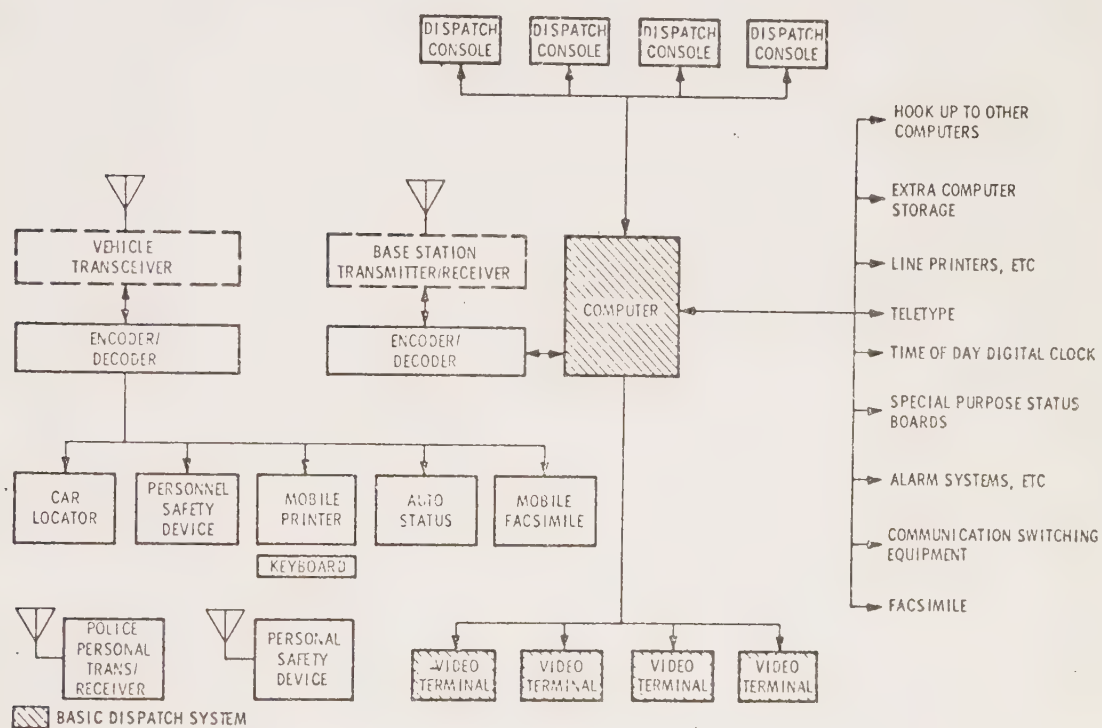


Figure III-63. COMMAND AND CONTROL SYSTEM

The development of a system for San Francisco can be accomplished by a combination of recognized needs (derived from operations analysis), feasible working ideas (from operations research), analysis of user requirements (from systems engineering), proven concepts of system design, use of up-to-date technology (such as use of new "mini-computers"), and appreciation of new techniques of police field forces management.

Following the cycle of development mentioned above, one must analyze the needs and special requirements concerning a project before an engineering design can commence for the city. In uniformed police operations, three functions are basic -- handling requests for assistance, dispatching units to render the requested assistance, and the handling of communications. Less noticeable functions are more limited to supervisory personnel but do pose specific requirements in any particular police operations. These include maintenance (filing and retrieval) of records of communication, determining beat structures, assigning work loads, and determining overall allocation and deployment.

The system operation is organized around a small mini computer. A television type data terminal is used to input and output requests for service. (See Fig. III-64). A color television situation display shows, with characters over a map background, up-to-the minute stations and location of each unit in the field as well as the priority and location of requests for service pending action, to each individual dispatcher as shown in Fig. III-65. A small digital type magnetic tape recorder maintains time stamped records of all activities. The prototype system provides to the complaint clerk a Computer Software Beatfinder program which verifies the address of received complaints. The color television situation display gives the dispatcher the capability of selecting the most appropriate car for an assignment and thereby providing quick response time. The



Figure III-64. TELEVISION DATA TERMINAL



Figure III-65. INDIVIDUAL DISPATCHER STATIONS

stored records can be retrieved by supervisory personnel in the form of the status of any and all units and a log of all activities during any given time segment.

How do the functions of complaint handling, dispatching, and maintaining records fit into the command and control system developed? First, allocation of forces is optimized because the computer keeps a constant record of calls, time required to answer the call, location of incident, type of service required, etc. The computer analyzes this data and provides a profile of activity by type, location, time of day and week, and forces required to handle call. The profile provides rapid up-to-date, easily accessible information upon which decisions of beat structures, and number and frequency of patrols can be made and revised. Thus, optimal use of forces can be realized -- minimalization of uneven service in various sections of a city.

Deployment of forces is optimized through constant awareness of status changes as shown by the computer coordination of communications from citizens, and between the dispatcher and the patrol units. Decreased holding time of calls and faster response time also contribute to optimization of deployment.

Control of police forces is greatly enhanced by the monitoring capabilities of the system. The constant display of activity on the beat map and the up-to-the minute changes shown on the status board show the where and what of any unit at any time. More specific information; such as how long, is provided on-line by easy fast retrieval from the daily log or record of status changes stored in the computer's memory.

As may be gathered, the technical solution to the problem of command and control of uniformed police revolves around a computer. The computer drives all peripherals, such as data terminals, provides solution to communications

records storage and retrieval, provides analyses and profiles useful in decision making, and provides yet-to-be developed capabilities; such as interface to state and national time share computer systems.

A key peripheral is the map display and status board console. It includes the functions of a color CRT, keyboard terminal and several other special purpose features. It provides dispatchers the ability to select the closest or most appropriate unit for response to needs and gives a realm of tactical planning not attainable in present communications centers.

The automated dispatching system description is described as follows, (Fig. III-66).

When the police emergency number is dialed by a citizen, that call is received at the complaint clerk module. (See Fig. III-64). As the complaint information is typed on the keyboard, it is registered in the daily log (in the computer's memory) and simultaneously registered at the appropriate dispatch console. Thus, the computer acts as an information transfer device. A portion of the computer program called the Beatfinder information file confirms the location of the event, eliminating the need for manual search, and supplies the basic area unit (BAU) member.\*

The transfer of information to the dispatch console is provided by the computer interface. When a request for service message is received at the dispatch console, the message case record number, priority, time of arrival, and radio code are displayed on the "synopsis case listing" on the video data terminal. Simultaneously, an abbreviated case record number is displayed on the situation display with a color indicating the priority. The availability and location

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\* All event and unit locations are given in terms of BAU's rather than beat numbers because varied beat configurations composed of combinations of BAU's are used in the system.

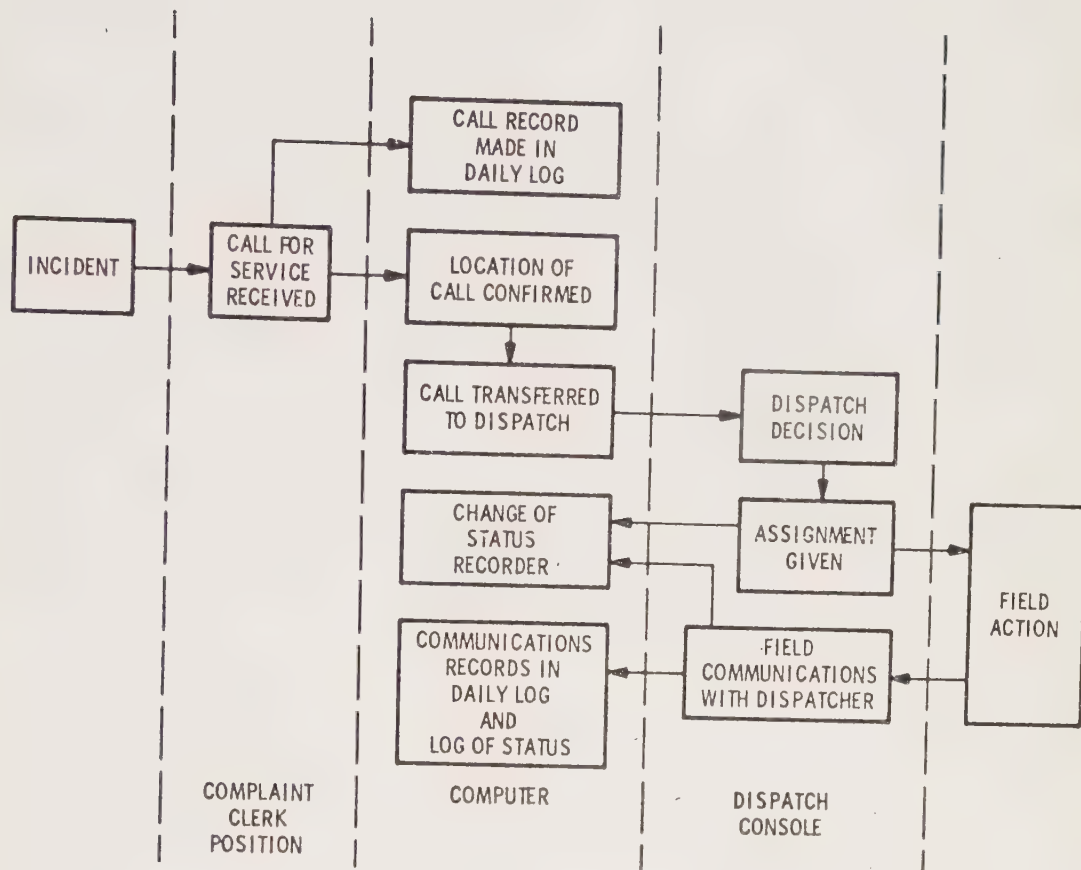


Figure III-66. DATA FLOW GRAPH

of field units are shown by alphanumerics in color codes.\*\* Thus the dispatcher sees at a glance the location and priority of any calls that have not been answered and the location and status of every patrol unit.

Based on the knowledge gained by glancing at the map situation display, the dispatcher decides which unit to assign to a given incident and proceeds in assigning a unit to the event. If details are needed in relaying the message, he needs only call up the message on his video data terminal to see the entire call message.

Usually the closest available car is dispatched. In the fully automatic system this car would be dispatched directly via digital communications, but special situations may arise when the dispatch-commander would send a different unit. Such a special case might be the dispatching of emergency tactical units rather than regular patrol units for certain types of calls. This is why, even in the fully automatic system, computer-directed assignments may be countermanded by the dispatch commander.

In the basic system, the dispatcher must keep the computer up-to-date on all status changes. Each time he communicates with a patrol car, or vice versa, a record of the communication is entered into the log of status changes or daily log via the dispatcher's keyboard. In the full-up system, routine communications\* from the cars are entered directly into the computer logs digitally and the dispatcher has only to enter any special voice communications.

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\*\* For example, a yellow 07 represents the seventh call received and is a low priority call; a green B4 indicates that unit 4 of district B is available. He can look at the disposition of calls and units on any map presentation chosen from the repertoire of maps in the slide carousel. This may be a beat map, a district map, or a city-wide map.

\* The digital communication equipment now being tested in S.F. provides automated status, license plate checks, and digitized dispatching and radio messages.

## Command Functions Served by the System

### Information Handling

When the complaint clerk enters the call message into the keyboard, the following information is recorded in the daily communications log: time of call, priority, location, and code for the type of event reported. When the dispatcher assigns a unit to the call, the time of assignment and the identity of the unit is entered into the log. The report of arrival at the scene may have been entered if this is the practice of a given department. The time of the conclusion of the field action and any follow-up action is also entered into the daily log. Thus, the computer has on file all information needed for planning decisions, resource allocation decisions, distribution guidelines, or emergency command decisions.

### Utilization of Manpower

Optimization of manpower utilization is enhanced by the allocation and distribution data provided by the system. Because of the amount of data required, the use of computers in resource allocation cannot be overemphasized. In the system being described, the data terminals and the computer provide preliminary data inputs and preprocessing. Data entered into the computer logs from the complaint and dispatch terminals is formatted by time, type and priority of call, and by location. As this formatted data is processed, it is organized according to a Basic Area Unit statistical data base. Thus, the outputs available for manpower planning are complete and properly formatted for most allocation and distribution schemes.

A constantly updated profile of calls by type and locality is maintained by the system. Resource data is matched with this and an initial distribution scheme, patrol strategy, and alternative beat configurations are determined. The situation map display shows the current demand for police services and allows the commander to redeploy his forces on

the basis of real-time shifts in the need for service and the availability of units.

Some police departments, such as St. Louis, Tucson, and Tampa,<sup>2</sup> utilize modern concepts in allocation and distribution. However, many departments still find the simplest deployment scheme is to divide equally by the number of shifts and then by the number of beats<sup>3</sup>. The command system collects, organizes, and updates the information required for good deployment practices in a manner that almost precludes the tendency to stick to the simple but ineffective "divide evenly" distribution schemes.

#### Emergency Command Decisions

By knowing the activity in any or all parts of a city, a commander may divert heavy concentrations of the force at one location without entirely depleting other areas of police services. Furthermore, status information is readily available and easily retrieved. For example, the whereabouts of certain officials may be included in the status log so that, let us say, the mayor could be located in an emergency situation.

#### Supervision Attributes

The commander also has information necessary for supervision. He may wish to review the status of all units at

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<sup>2</sup>Allocation of Patrol Manpower Resources in St. Louis Police Dept. An experiment conducted under law enforcement grant no. 39 July, 1966. And Charles J. Fisher and Robert L. Smith, "Tampa Selective Deployment Patrol System," The Police Chief, Vol. XXXVI, No. 6 (June, 1969), pp. 52-57.

<sup>3</sup>Roy M. McLaren, "Allocation and Distribution of Police Patrol Manpower," p. 600 Law Enforcement Science and Tech., Proceeding of the First Nat. Symp. on Law Enforcement Sci. and Tech., Vol. 1 (Thompson Book Co., 1967) pp. 599-609.

present, or the status of a particular unit for the last several hours. Personnel review and emergency command situations are but two of many possible reasons for desiring easy, rapid retrieval of current information. Best of all, however, a source of feedback on effectiveness of action is provided by the information currently available.

### Benefits of the System

#### Reduced Response Time

The most talked about advantage of computerized communications equipment is the reduction in response time. Not only does reduced response time favorably influence the rate of criminal apprehension as Isaacs suggests,<sup>4</sup> but it also provides better, more consistent service to the public and optimizes the utilization of manpower.

Typical communications center response times are composed of the length of the call, the time delay involved in waiting for an operator or complaint clerk, the time to make a record of the call content (usually hand-written), time to transfer the message to the dispatcher to call up and assign a unit, and the time delay -- if any -- involved when the dispatcher has to wait for a car to become available. The automated system eliminates the manual processing of calls (writing out complaint cards), manual address search, and manual or mechanical transfer of information to the dispatcher. Table III-37 shows some typical communications center response times. See table on following page.

#### Better Complaint Handling Service and Reduced Error Rates

While response time of the complaint phase is reduced by over 50% -- to the length of the call only -- other advantages are also realized by the system implementation. For

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<sup>4</sup>Herbert H. Isaacs, "A Study of Communications, Crimes, and Arrests in a Metropolitan Police Department," Task Force Report: Science and Technology, Appendix B, pp. 88-106.

Table III-37  
TYPICAL COMMUNICATIONS CENTER RESPONSE TIMES

Communications Center	
<u>City</u>	<u>Response Time</u>
Los Angeles <sup>4</sup>	5.17
Rochester, New York <sup>5</sup>	6.19
Boston, Massachusetts <sup>6</sup>	4.20
San Jose, California <sup>7</sup>	7.92

example, more calls can be handled by the same number of lines and operators. The reduction in complaint clerk service time also reduces the probability of getting a busy signal on the police emergency phone lines.<sup>5</sup>

Another point of significant impact is the reduction in error probability. Insufficient or inaccurate information on request for service cards affects field response time by requiring the officer to search for information that should have been provided. In a Sylvania study of one police department's operations, 26% of the cards gave no information about time to call, type of call (radio code) or location of call. Another 24% of the cards gave inaccurate or improper information.<sup>8</sup>

Accuracy in the computer system is assured in several

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<sup>4</sup>Herbert H. Isaacs, pg. 9.

<sup>5</sup>A Study of the Tactical Communications System of the Rochester Police Bureau, Rochester, New York. Phase I Report, August, 1969. Law Enforcement Grant #322, pp. 30 and AIV 33. Also Appendix AII, "Complaint Board Traffic," by Dr. Louis V. Surgent.

<sup>6</sup>Richard C. Larson, Operational Study of the Police Response System Technical Report No. 26, Operations Research Center, MIT, December 1967.

<sup>7</sup>Operational Analysis of Police Field Force Command and Control in San Jose, Sylvania Electronic Systems -- Western Division, August, 1968, pp. 16 and 11.

<sup>8</sup>Ibid, p. 10.

ways. A long message might consist of 10 to 15 words. To enter this length of message during the time of an average call is an equivalent of typing not more than 25 words a minute -- a rate which allows for great accuracy. The sequential response of the complaint -- beatfinder program assures that all necessary information is recorded. Errors will still occur wherever there is a man-machine relationship, but the error rate would drop substantially with the computer system.

#### Dispatcher becomes "Dispatch Commander"

Another direct result of the system hardware is the upgraded role of the dispatcher. The alphanumeric interface (the display map) aids the dispatcher in several ways. The information concerning locations and status is always current, accurate, and relevant. Beat structures can be easily changed by selecting different slide overlays. Close-up maps of given areas can be quickly accessed from the slide repertoire. Thus freed from a great deal of routine motion and supplied with complete decision-making information, the dispatcher may gradually assume the responsibilities of a "dispatch commander". Perhaps a watch commander would even take over the duties of the dispatcher during times of crisis or acute peak loading problems. The dispatch commander sees at a glance all reported activity in the city. He knows the availability and use of all police resources and is familiar with certain recurrent patterns of police and criminal activity. Thus, the dispatch commander can make reasoned judgments about special situations, can take the time to decide on sending special tactical or emergency units rather than patrol units, and possibly avert the spread of panic during disasters or contain the perimeters of riot areas. Truly, the hardware of the system offers a tool by which the dispatcher enters the realm of tactical planning.

### Increased Availability of Cars

The major source of communications center response delay is the time spent in the dispatcher queue -- that is, the time lapse between the arrival of a message at the dispatcher's console and the assigning of a unit to answer the message. The greatest part of this delay is the time during which the dispatcher must wait for a car to become available for assignment. The non-availability of cars is due to several factors.

Manpower shortage is an element of this delay, but an element that can be overcome by optimal distribution and deployment policies and by optimal dispatching policies. If these policies are inadequate to provide even distributions according to police workload patterns by time of day and by area, time will be lost by beat cars travelling out of their beats. On the other hand, dispatching across beat and district boundaries may reduce response time when a peak loading situation occurs in a particular area.

A simulation evaluating the effects of the computerized allocation-distribution-deployment feature pointed to several conclusions: 1) Since longer holding times increase the average response time, all calls should be answered promptly; and 2) For any given holding time, the computer derived BAU based scheme resulted in reducing to one-half the number of calls answered by non-beat cars.\*<sup>8</sup> This resulted in saving travel

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\* More recent runs of the simulation have shown the reduction to be from 30% to 16%. The amount of extra time that a patrol unit's status is "available" is the factor that reduces the dispatcher queue delay.

<sup>8</sup> Ronald Adams, Craig Peterson, and Sharon Barnard, "Simulation of Police Field Forces for Decision Making in Resource Allocation," June 1969, Stanford University.

mileage as well as travel time, thereby reducing field response time as well as the dispatcher queue delay. Since the unit is "out of service" for a shorter period of time, the unit is essentially "available" for a longer period of time.

#### Costs Benefits of the System

The simulation cited above also showed that the simple addition of manpower follows a logarithmic curve; after six to ten men are added, further reductions in response time are minimal. Comparing the savings in travel mileage and travel time to the cost of providing one patrol unit per shift per day, the dollar savings affected by the system are equal to the cost of adding from 1 to 4 policemen to the department on a 5 shifts per week (40 hour work week) basis.<sup>9</sup>

The basic command and control dispatch system provides better complaint service, faster response time,\* and easily accessible up-to-the-minute information with no increase in manpower requirements. Allocation and distribution analyses no longer need to be processed by keypunch operations. In present operations, such as the one employed in San Francisco, where calls are handled by both telephone operators and police complaint clerks, the police can be freed for other duties. The increased availability of cars has the effect of providing more manpower.

On the other hand, the addition of one man to a conventional operation costs approximately \$21,000 per shift per year<sup>10</sup>, reduces response time by less than a minute, and still does not attack the basic problems of coordination brought on

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<sup>9</sup> Simulation of Police Field Forces for Decision Making in Resource Allocation, pg. 12.

\* Communications center response times of 3 or 4 minutes are realistic estimates. Firm data requires waiting until completion of field tests.

<sup>10</sup> Ibid.

by enlarged staffs. Thus, when the cost of the system implementation is spread over a 5 or 10 year period, the computer system is more economical dollar-wise and far more practical than the blatant addition of manpower.

The system described can fulfill various goals associated with police patrol operations.

Operationally, the system provides efficient handling of routine requests for service and rapid handling of emergency requests, prompt and efficient dispatching, adequate records maintenance, and easily implemented plans for distribution and deployment. From the management point of view, the system supplies management information for supervisory and personnel decision-making, provides statistics and data for long-range planning, including resource allocation studies, and supplies the framework for increased cooperative efforts with state, national, and other agencies. Service, as a response to requests for service will become faster and more consistent, and adequate but not excessive exposure will enhance the public image of the police department. The usage of such automatic equipment in the future operation of the police department combined with the suggested reorganization can contribute significantly to a reduction of the police-community rift and begin to reduce the core city police crime problem.

#### Procedure for Receiving Complaints

A citizen of San Francisco requiring the services of the police must often phone the Hall of Justice. These calls are received on the fourth floor of the Hall of Justice by operators who connect the party with the proper communications dispatcher. The Communications Unit has at its disposal five radio frequencies, two of which are used to dispatch radio patrol cars to locations where they are needed. The dispatcher, while listening to the phone conversation on a head set, stamps a dispatch sheet recording the time

of the call (see Fig. III-67), and enters the pertinent information required. He then calls the patrol car in whose sector the need for service originated and assigns the call to the designated car, if available. The dispatch sheet is then placed in a holder within reach of the communications dispatcher. On notification by the patrol car that the assignment has been completed, the slip is again stamped, indicating the time of completion. These sheets are tallied at the end of each 24-hour period in order to obtain an aggregate account of the number of assignments dispatched through the Communications Unit. The sheets are then filed in the Communications Unit for a period of approximately two months, at which time they are removed and filed in the department's record room. Simultaneously with the receipt of the radio message by the patrol car, the message is received over a monitor at the District Station, where a patrolman assigned to station duty records the information transmitted in a log book. The time of call, the type of call, the location and the names and car number of the patrolmen assigned to respond are recorded.

The call back to the Communications Unit upon completion of the assignment is likewise monitored and the time of completion entered into the log. The patrolmen assigned to station duty then prepares a Complaint Investigation Report (see Fig. III-68) which is signed by the patrolmen who were assigned to the activity when they report the disposition of each assignment to the Station House at the end of their tour of duty. The Complaint Investigation Reports are examined by the watch commander for completeness and accuracy, tallied to determine an aggregate account of the number of assignments handled by each sector in the district during the 24-hour period and sent to the record room in the Hall of Justice to be filed. This account of procedure was taken from San Francisco's Mission Police District: A Study of Resource Allocation, 1968, R. McCormack, Jr., J. Moen, School

of Criminology, University of California, Berkeley, California, pp. 22-25.

ID 30	31	TIME RECEIVED	TIME DISP./SERVICED	TIME RETURNED	CODE STATUS
					2 3
32		NAME		NATURE OF COMP.	4 33
CWB 30	901	TO:	BY	MESSAGE	LINE #
32		FROM./SOURCE	BY	LOCATION / 10-20	CODE-10
VEH. CK. 30	32	SERVICE		NAME / LIC. NO.	
		YEAR	MAKE	MODEL	ADDRESS
		RACE	SEX	D.O.B.	

NAME - RACE - SEX - AGE - HT. - WT. - HAIR - EYES - COMPL. - MARKS - DRESS - PECULIARITIES

SUSP. #1	SUSP. #2
WEAPON?	WEAPON?

AUTO: MODEL - MAKE - BODY - COLOR - LICENSE NO. - STATE - YEAR - OTHER MARKS

DIRECTION OF ESCAPE	REMARKS/DISPOSITION

Figure III-67. DISPATCH SHEET

DISTRICT		SAN FRANCISCO POLICE DEPARTMENT		DISTRICT COMPLAINT NO	
RADIO COMPLAINT INVESTIGATION REPORT					
CAR NO.	WATCH 1 <input type="checkbox"/> 2 <input type="checkbox"/> 3 <input type="checkbox"/>	THIS REPORT MADE	DAY	DATE	19
NATURE OF COMPLAINT				DAY, DATE AND TIME RECEIVED	
				DAY, DATE, TIME COMPLETED	
LOCATION				OFFENSE REPORT MADE?	
				YES <input type="checkbox"/> NO <input type="checkbox"/>	
ACTION TAKEN					
PRINCIPALS INVOLVED					
OFFICERS MAKING THIS REPORT				APPROVED BY	
SIGNATURE 1		STAR		STAR	
SIGNATURE 2		STAR			
				PLATOON COMMANDER	

Figure III-68. COMPLAINT INVESTIGATION REPORT SHEET



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